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Four-In-One Air Conditioner Meets Virtually Any Need

New AmeriCool WMC-2500 Can Be Portable, Stacked, Hung From The Ceiling, Or Mounted In A Rack

VERSATILE. EFFICIENT. HIGH-QUALITY.

Too often, buyers are forced to sacrifice one or more of those features to find a product that meets their needs and stays within their budgets, particularly when it comes to cooling their data centers.

But the AmeriCool WMC-2500 has all of those qualities and adds environmentally-friendly, a wide operating range, and a light weight of 110 pounds. And it's from a reliable manufacturer that stands behind its products with an industry-leading warranty that includes labor.

"Currently, there is no self-contained air conditioner on the market that has the capabilities, adaptability, and affordability like the WMC-2500," says Mike Paulson, president of AmeriCool.

Know What You Need

You don't have to look around long to realize that the cooling market has an almost dizzying array of choices from a variety of manufacturers. But Paulson says watching for a few key features will ensure you get the best unit for your environment.

"Managers must understand the contents of the space requiring additional cooling," Paulson says. "Is it people? Equipment?"

Once you know what will be inside the space that needs cooling, you can focus on finding a high-quality unit, he says. "Choosing a high-quality unit will give you the peace of mind knowing it will work without fail. Units should be able to operate 24/7 for all instances."

It's also important that the cooling unit you purchase be able to support a wide temperature range. All AmeriCool units can operate from 64 to 113 degrees Fahrenheit. In addition, all units have integrated safety devices to prolong the life of the units.

Purchasing a product with the correct cooling capacity will avoid the headaches that can come from units that are over- or under-sized for your room. "Managers should size a unit to be larger than their current requirements," Paulson says. "When upgrading equipment, usually the heat load increases. Planning ahead is actually preventative maintenance."



Don't forget to ensure the cooling equipment you purchase is from a reputable company or distributor. Can you easily reach the company or distributor? AmeriCool has an 800 number that you can contact at any time for product information, support, and availability.

No Floor Space? No Problem.

As with all of its products, AmeriCool designed the WMC-2500 with the customer in mind. The result is a small-footprint product that cools and dehumidifies the air in your data center or server room and can be modified to meet your unique installation requirements, making it perfect for difficult installations.

"The WMC-2500 can be used anywhere cooling is needed," Paulson says. "As a rack installation or ceiling-installed unit, it can work great in small server closets or places where space is limited. As a portable or stacked unit, it is mobile and can be moved throughout the server room to handle individual hot spots."

One of the biggest factors is often a lack of available floor space for the

cooling unit. Because the AmeriCool WMC-2500 can be mounted directly inside a server rack, it does not take up any additional floor space in server rooms. The WMC-2500 is discretely located at the bottom of the rack, so it's still easy for you to maintain and service equipment inside the rack.

If mounting the 10,000BTU/h WMC-2500 in a rack isn't an option, its other installation options still ensure it consumes a limited footprint (24 x 17.25 x 20 inches). For a small room, you can hang the WMC-2500 from above to provide cooling. With the portable kit, the unit can be wheeled around to where it's needed most. Up to three units can be stacked on top of each other to provide 30,000BTU/h of cooling in a compact (tall) unit.

Other standard features include the ability to replace the cold air nozzles with an included grill, spot and room cool settings, an off-timer, and automatic restart settings. It comes with a condensate pump, washable vinyl chloride filters, and 20 feet of 1/2-inch condensate tubing.

Cost Savings

All of this adds up to cost savings for you. The simple and easy installation when compared to a split system saves time and labor costs. Plus, spot cooling is an energy-efficient alternative to central air conditioning. The WMC-2500 is backed by a one-year warranty on parts and labor for the entire unit and three years parts and labor for the compressor. All warranty claims are handled by the distributor the unit was purchased from.

"AmeriCool is devoted to providing our customers with the highest-quality product at an affordable price," Paulson says. "Our goal is to continue to introduce products that are innovative and solve the needs of our customers." ^P



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Processor
Products, News & Information

Network Security & Your Organization

Planning & Proper Resources Are Key To Protection

THROUGHOUT THE FIVE YEARS that Milton Security Group (www.miltonsecurity.com) has been in business, the company has talked to, and helped, quite a number of organizations of all sizes. Each of these organizations has unique problems, but there are common themes between all of them. The biggest theme, or question, seems to be, "How do we secure our growing data, network, end nodes, systems, or cloud when we have less money based on organization size or type. The biggest solution at its core will be pretty similar, but the implementation will be different between organizations; Milton Security Group believes they can be separated into simple groups: Who, What, Where, When, Why, and How.

The key part of the security strategy—and where most resources are spent—is being able to control and monitor each one of these groups. What is the situation like in organizations that are unprotected? If an employee neglects that nagging reminder about updating his system and goes on a business trip, not only would he be vulnerable, the likelihood of his system being compromised in some way is much higher. And when that employee returns to HQ and plugs in, he is practically courting the threats into the building. Being able to monitor and control the level of security on employees' devices is therefore vital to an enterprise's data security.

Steps To Security

Over time, Milton Security Group has found that most organizations are seeking a "What should we do first?" list for implementing Adaptive Network Access Control.

If an employee neglects that nagging reminder to update his system and goes on a business trip, not only would he be vulnerable, the likelihood of his system being compromised in some way is much higher. And when that employee returns to HQ and plugs in, he is practically courting the threats into the building. Being able to monitor and control the level of security on employees' devices is therefore vital to an enterprise's data security.

Anonymous Hacks Military Gear Supplier...

More than 20,000 credit card numbers and passwords were stolen from online military gear supplier Special Forces Gear, and hacker group Anonymous is claiming responsibility. In a statement posted on the message board Pastebin, the group says it pilfered 8,000 credit card numbers and 14,000 passwords in August. Special Forces Gear has confirmed the attack and says it has completely revamped its site with new security measures. The company says it will prevent another attack from happening. Anonymous claims it targeted the site because its customers are largely military and law enforcement personnel. The news came on the heels of Anonymous' announcement of a similar attack carried out against security company Securus.

Switching A Little

For Enterprises with Concerns About the Security of Cloud and Need to be Compliant with Multiple Device Managers, a New Switching Solution May Be the Answer.

Switching is a critical component of any network, and it's also a critical component of any cloud environment. The challenge is to create a switching solution that can handle the complexity of a cloud environment while also being compliant with multiple device managers. A new switching solution, the A1001, is designed to meet this challenge. It's a switching solution that can handle the complexity of a cloud environment while also being compliant with multiple device managers.

ATEN Changes

The ATEN Group has announced a new line of KVM1001 switches. These switches are designed to be used in a cloud environment. They are compliant with multiple device managers and can handle the complexity of a cloud environment. The ATEN Group has announced a new line of KVM1001 switches. These switches are designed to be used in a cloud environment. They are compliant with multiple device managers and can handle the complexity of a cloud environment.

PC Standby

PC Standby is a new power management solution. It's designed to be used in a cloud environment. It's compliant with multiple device managers and can handle the complexity of a cloud environment. PC Standby is a new power management solution. It's designed to be used in a cloud environment. It's compliant with multiple device managers and can handle the complexity of a cloud environment.

Power Management

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COMPANY TO WATCH

Tackling Today's Air-Handling Challenges

Mestex Offers HVAC Innovations, Range Of Products For The Data Center Market

THERE'S A SEEMINGLY ENDLESS array of vendors providing solutions to help solve your data center cooling issues. How do you find a vendor you can trust? Industry experience is one of the best judges, and Mestex has no shortage of that.

“Our evaporative cooling product lines have been in existence for 66 years,” says Mestex President Mike Kaler. “We pre-date our competitors by at least 15 years.” Mestex uses that experience and knowledge of the industry to understand your unique data center cooling needs and provide the HVAC systems that will best match your needs and building type.

Unlike many cooling vendors, Mestex offers a complete line of data center

cooling products, including portable, direct evaporative, indirect evaporative, and packaged rooftop units.

Portable

The Koldwave products offered by Mestex are ideal for data centers in need of either permanent or semi-permanent cooling in server and telecommunications rooms, network closets, and any other area with cooling needs.

Koldwave products can provide between three-quarters ton and 5 tons of cooling and come in both water-cooled and air-cooled versions. A steel framework, stainless steel construction, and heavy-duty industrial casters make the units among the sturdiest in the industry. Color-coded connections simplify



installation, and digital controls with an optional IR remote control make management easy.

Direct Evaporative

The Alton Seasonal Make-Up Air Unit features a direct evaporative cooling option that's one of the most efficient ways to cool, changing warm dry air into cool air and costing about one-fifth the cost of mechanical air conditioning.

Indirect Evaporative

An indirect evaporative cooling unit, such as that found in the Aztec system from Mestex, uses a cooling tower and chilled water coil integrated in the unit, an approach that simplifies installation and data center infrastructure requirements. You can configure the Aztec to combine indirect evaporative cooling and fresh air cooling for greater energy efficiency.

Evaporative cooling units have traditionally been beyond the price range

of what small to mid-sized enterprises can afford. But the Aztec units solve that by providing self-contained, rooftop-installable, “bite-sized” units pre-engineered and preconfigured with digital control and monitoring software. Plus, the Aztec works with and without underfloor constructions.

Beyond managing the unit's temperature and pressure control via up to five cold-aisle temperature and one cold-aisle pressure sensors per unit, the digital control system monitors operation and provides service notices, temperature trend recording, and optional GUIs accessible onsite or via Internet access.



Packaged Rooftop Units

More than six years of research and design went into building the Applied Air Fresh Air Package from Mestex. It's a dedicated outdoor air system that can also be used with return air off of the data center hot aisle.

While most similar units can handle air up to 90 degrees Fahrenheit, the Fresh Air Package has been certified for up to 115 degrees, offering greater flexibility for raising your cold aisle temperature. The included DDC controls are compatible with BACnet, LON, N2, and Modbus.

Company Name: Mestex

Location: Dallas, Texas

Phone: (214) 819-5221

URL: www.mestex.com

The Mestex logo, featuring a stylized 'M' made of horizontal bars, followed by the word 'MESTEX' in bold, uppercase letters. Below it, in smaller text, is 'A Division of Mestek Inc.' and the address '4830 Transport Drive | Dallas TX 75247'.

CASE STUDY

A Clean Bill Of Health

Medical Center Turns To Area Data Systems For An Affordable Storage Solution

WHEN YOU WORK for a hospital IT department, all sorts of nightmarish situations can go through your mind. Stolen laptops. HIPAA regulations. Security breaches. Fines.

Such was the scenario for Keith Brennan, network specialist at Delano Regional Medical Center (DRMC), a full-service community and regional teaching hospital with about 200 beds in Delano, Calif. The center's IT department was making a big push toward setting up a virtual desktop interface, or VDI.

“I wanted to get all the data off of the individual machines,” Brennan says. “I don't want desktops and laptops to have data; I want it in a central place where I can manage and look at it.”

That Would Definitely Hurt

The major driver for the VDI project was the increasing regulatory environment medical institutions such as DRMC face with HIPAA, meaningful use requirements, and health information management. In addition, Brennan says, California has several local laws that impact medical institutions.

“If someone were to break in and steal laptops, it would hurt, especially if they have patient data,” Brennan says. “The more I can do to get data off of laptops, the more secure I can be.”



When it began to implement VDI, DRMC had two smaller server-based SANs from a big-name manufacturer running a VMware environment. But after deploying VDI on about 30 machines, users complained about slow response times on their virtual desktops, and changes such as anti-virus engine updates could only be performed on a few machines at a time.

Quite simply, it was too much for the existing DRMC setup to handle.

When Brennan found out that he was maxing system performance with just day to day operations, even though the storage appliance was functioning properly, he began looking for alternatives. He looked at investing in larger systems from several major manufacturers. “Pricing was kind of way out of whack for what I could afford,” Brennan says.

Brennan's quest for a solution turned to the open-source ZFS file system and Nexenta. “I

remembered back to a buddy of mine talking about Nexenta,” he says. Plus, Brennan had recently installed Nexenta for his home file server. He set up a test system using an existing DRMC server and SSDs because he wanted to make sure throughput wasn't a problem.

“It worked like a charm. Users couldn't tell the difference between running on local machine or the VDI,” Brennan says. With the previous VDI setup, he says, “users hated it; it would take five seconds to open documents.”

Found The Cure

Once he knew the Nexenta setup would give users better performance, he was sold. Brennan needed to find a Nexenta partner that understood how to leverage the benefits of using STEC SSD drives. Delano chose Area Data Systems to build the entire solution.

“Their breadth of knowledge was impressive. From talking with them, they told me how I needed to do it and what I needed to do. Area Data's storage knowledge really pushed me to go with them,” he says.

DRMC purchased a high-availability solution with two servers, two JBODs from DataON Storage, and the recommended STEC SSDs. “This gave us the best IOPS solution for the end-user experience for VDI, while maintaining budgetary sanity,” Brennan says. Implementation was quick.

“Thanks to Area, within a day, I had the system built, racked it, stacked it, and had it up and running.”

Preventive Medicine

One of the things Nexenta lacked was a way to monitor the JBODs. But the DataON Disk Shelf Management (DSM) 3.1 monitoring solution helps Brennan and his techs spot hard drive failures and detect the drive's location within the array.

“We don't have a huge IT staff. If I'm gone, I want one of my help desk guys to be able to pop into the software, see what drive is out, and replace it.”

Brennan says he hasn't run into any surprises or “gotchas” with the solution. “Overall, I'm very pleased. I got a solution at a third of the price of competitors and have had zero complaints with it . . . the end user experience has been greatly improved.” And he's confident the system will continue to meet DRMC's demands. “It will grow as capacity grows; it scales so nicely.”

Area Data Systems

As a Nexenta Premium Partner, Area Data Systems designs tailored storage solutions to meet a company's unique needs. Solutions can combine the NexentaStor software and industry-standard hardware such as that offered by DataON Storage.



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FEATURED PRODUCT

Exactly What You Need In A PDU

Geist Offers Thousands Of Standard PDUs & Can Quickly Produce Custom Solutions

WHERE DO YOU TURN when you need a specific PDU fast? How about if you're in need of a PDU that's custom designed to fit your unique needs? Like most enterprise data centers, you likely have a supplier you can rely on when you quickly need an off-the-shelf PDU, but any special orders or custom designs can take considerable time.

Since producing its first rackmount power strip in 1994, Geist has perfected a built-to-order manufacturing process that allows it to build thousands of standard PDUs as well as custom offerings within days.

"Other competitors stock only popular units, and if customers want something out of the norm, they have to wait for it," says Sean Heyen, director of marketing at Geist. "We don't stock products on the shelf. We are prepared to fabricate steel and build any one of our standard products in just days. This gives the customers access to the widest range of products without delay."

And it goes beyond just standard products, Heyen says. The process ensures Geist can customize products that are outside of its current product line. "It would take a little longer," he says, "but when we have a focused customer with a critical deadline, we can produce a custom unit in about two weeks."



The Full Lineup

Geist's complete lineup of PDUs includes basic, monitored, switched, and satellite power products, with unique features such as low-profile breakers and locking receptacles.

"One of our biggest advantages is our large breadth of standard products," Heyen says. "We have well over 2,000 standard offerings." The Geist website features a PDU Finder (www.geistglobal.com/pdu-finder) that lets you search Geist's products by total receptacles, display, switch, breaker, and other features.

Geist PDUs are made in America with rugged black steel cases. Soldered connections ensure long-lasting connectivity, and single, solid-piece wiring ensures maximum continuity.

Basic. Geist's basic PDUs offer reliable power distribution with optional local current and power displays for onsite performance tracking.

Monitored. The monitored line of Geist PDUs are a step up from the basic PDUs, letting you track performance onsite or over the Internet. Options include:

- Current monitoring, which shows instant feedback on current usage.
- Power monitoring, which displays current, volts, real power, apparent power, power factor, and kilowatt hours.
- Outlet-level power monitoring, showing each outlet's current, volts, watts, and kilowatt hours.
- Wireless power monitoring, which integrates Packet Power's wireless power and temperature monitoring technology into a Geist power strip.

Switched. The switched PDUs let you remotely disable specific outlets so you can neutralize or reboot problem equipment no matter where you are. Switched Ultra products add outlet-level power monitoring.

New Innovations

As a leader in the PDU market, Geist continues to work on new innovations. Two of its more recent innovations are locking receptacles and low-profile breaker units, which come standard on some Geist PDUs or can be built into any custom configuration.

Low-profile breakers reduce PDU depth by more than 40% compared to traditional breakers, making them easy to install in cabinets with limited space.

Locking receptacles are built within the receptacle housing, protecting against vibration and elements that can dislodge external locking clips or guides. The self-contained locking mechanism works with standard C13 and C19 receptacles, so you won't need to modify cords or connectors or buy any special equipment. **P**

Geist PDUs

(800) 432-3219
www.geistglobal.com

A complete line of basic, monitored, switched, and satellite PDUs with optional monitoring, low-profile, and locking receptacle features.



FEATURED PRODUCT

More Outlets. More Flexibility. Highest Quality.

The ProGrade 42 Mixed-Outlet Smart PDU Lets You Pack More Power & More Devices Into Your Data Center

HAVE YOU EVER needed to fit more devices into a cabinet and just didn't have the available power to do so? It's a challenge most enterprise data centers are facing as they work to provide the server and storage capacity their businesses demand.

Lack of available power shouldn't be the limiting factor anymore with the 42-outlet ProGrade 42 smart PDU from PDUs Direct. It combines a large number of outlets in a small form factor, so you can add 30% more devices in a cabinet, according to PDUs Direct.

Built On Experience

PDUs Direct is a master distributor of select basic, metered, and switched data center rack PDUs from Server Technology, which has about 30 years of experience in designing high-quality products that are 100% performance-tested for reliability and accuracy.

The ProGrade 42 is the first-ever PDUs Direct-branded product and builds on the experience both it and Server Technology have gained in designing products that solve customers' power problems. PDUs Direct focuses on providing premium power distribution without the premium price, offering best-in-class pricing and organized, informative, and fast service and support. As a customer, that means

you'll get a quality product, delivered fast from a company you can trust.

Unique In The Industry

The zero-U rackmounted ProGrade 42 has several features that make it unique in the industry. The mixed outlet base ensures you can connect routers, switches, blade and traditional servers, and other equipment into the same PDU. It comes with 36 C13 outlets for traditional devices and six C19 outlets for high-power blade servers.

"Mixed outlets are a nice feature. With both the C13s and C19s, you have great flexibility in how you configure your rack equipment," says Jim Scherr, director of sales and operations at PDUs Direct. "It's very flexible with the mixed outlets, it's very universal with the large number of outlets and how they're spaced, so the customer can get whatever outlet he needs no matter where he's putting in his equipment."



The ProGrade PDU is encased in steel for the highest quality. A middle display can be inverted to make it easy to read whether you use overhead or under floor power. When you pair the ProGrade 42 with PDUs Direct's locking power cords, you know your servers will stay safely plugged into the cabinet PDU and its next-generation locking receptacles.

Available Capacities, Features

The ProGrade 42 is available in several different capacities, including 208-240V 30A, 230V 32A, three-phase wye 208V 30A, 400/230V 32A, and 415/240V 30A. Depending on the model, you'll find several additional features, including:

Per-inlet power sensing. View current load (A), voltage (V), power (kW), apparent power (VA), crest factor, reactance, accumulated energy (kWh), and power factor per inlet.

Link to an expansion CDU. Connect your ProGrade

42 to an additional link unit using a single IP address with up to four temperature and humidity probes.

Network monitoring. View power, temperature, and humidity levels via a Web browser and receive SNMP-based and email alerts when conditions exceed defined thresholds.

Input current monitoring. Digital LED displays report the input current of each phase or branch circuit to help prevent overloads in high-density environments.

Branch circuit protection. All PDUs Direct PDUs are certified to the UL 60950-1 standard.

Button mounting. The zero-U button lets you mount the PDU in the back or on the side of a cabinet. **P**

PDUs Direct ProGrade 42

(888) 751-7387
www.pdusdirect.com

A 42-outlet smart PDU that includes mixed outlets for powering both blade and traditional servers.



FEATURED PRODUCT

A Revolution In High-Density Fiber Patching

New Video Shows Siemon's Innovative LC BladePatch In Action

SIEMON, A LEADING GLOBAL network infrastructure specialist, has launched a video to demonstrate the impact of its new LC BladePatch® fiber optic duplex jumper. The short video shows how key features improve access, ease, time, and reliability for fiber patching and polarity reversal in ultra-high-density environments such as data centers.

According to Siemon, LC BladePatch revolutionizes high-density fiber patching with the easiest access available in the industry. The connector's patent-pending push-pull boot controls the latch, allowing easy insertion and removal without the risk of damage.

Carl Southern, security and network manager of Blue Chip, is featured in the video. He explains the challenge with traditional fiber patching: "One of the problems we have with fiber patching in our data center is when we're patching in high-density environments, it can be very difficult to insert the fibers, and it can be even harder to remove them. It can be very frustrating, and we can also suffer from damaged fibers. When we're patching in blade servers, access can be very limited—it can be very difficult to reach the latch with your fingers."

Intuitive & Ergonomic

Siemon's LC BladePatch can resolve all these issues with its intuitive, ergonomic



action. It eliminates the need to access a latch during installation and removal, avoiding any disruption or damage to adjacent fiber connectors in the tightest-fitting fiber patching environments.

Beyond patching, the polarity reversal was also demonstrated using the LC BladePatch's patent-pending rotating latch. As is shown, only the latch rotates, not the entire connector, which eliminates potential connector and cable damage during polarity changes, while clearly indicating that a polarity change has been made.

"I couldn't believe how easy it was after I was shown; very, very simple; very quick; and very safe," Southern says.

"Traditional fiber reversal often involves a high risk of damaging the fibers or the connectors. With this connector, that risk is minimized," he says. Plus the new jumper has an overall smaller diameter uni-tube cable design that reduces cable pathway congestion for improved airflow and energy efficiency and simplified cable management.

Like Nothing The Industry Has Seen

Robert Carlson, vice president of global marketing at Siemon, says, "The LC BladePatch is like nothing the industry has seen for high-density fiber patching. Its push-pull action allows easy removal from the finger grip at the end of the strain relief boot rather than trying to access an LC standard latch and potentially disrupting adjacent connectors. The LC BladePatch concept was born from a customer need, and as this video

demonstrates, it is truly the ideal solution for today's highest density blade server, SAN, and switch environments."

Southern agrees. "In our data centers, we are constantly repatching fibers, according to our customers' requirements. This connector makes our life very, very simple."

To view the LC BladePatch video and to order a free demonstration sample, visit www.siemon.com/lcbp.

Siemon LC BladePatch

(860) 945-4200
www.siemon.com/lcbp

The LC BladePatch fiber optic duplex jumper has an intuitive, ergonomic action that eliminates the need to access a latch during installation and removal.

- It features:
- A patent-pending push-pull boot design
 - A patent-pending rotating latch
 - An overall smaller diameter uni-tube cable design



CPS, LLC U-X3 Universal AC Power Switch



Computer Peripheral Solutions, LLC manufactures numerous products that are targeted towards very economical problem resolutions and increasing efficiencies within various niches in today's networking, such as local and remote controlled power devices, remote switching, telephone line sharing and dial security. They can be used in a variety of applications such as kiosks, monitoring equipment, security systems, observatories and lab/test centers, to name a few. Most units offer several different types of control, for example: USB, Wireless, ring count, touch-tone, cell and web. The products range from a single box to the more flexible and scalable modular systems.

The U-X3 (pictured above) is an economical, but extremely flexible AC power control device that can be used to control the AC power to three different devices via Ethernet, USB or Wireless.

The products were developed as a result of specific user requirements, others as OEM products while still others evolved solely on speculation. This has resulted in a rather diverse product line and has also served to expand the company's technology base.

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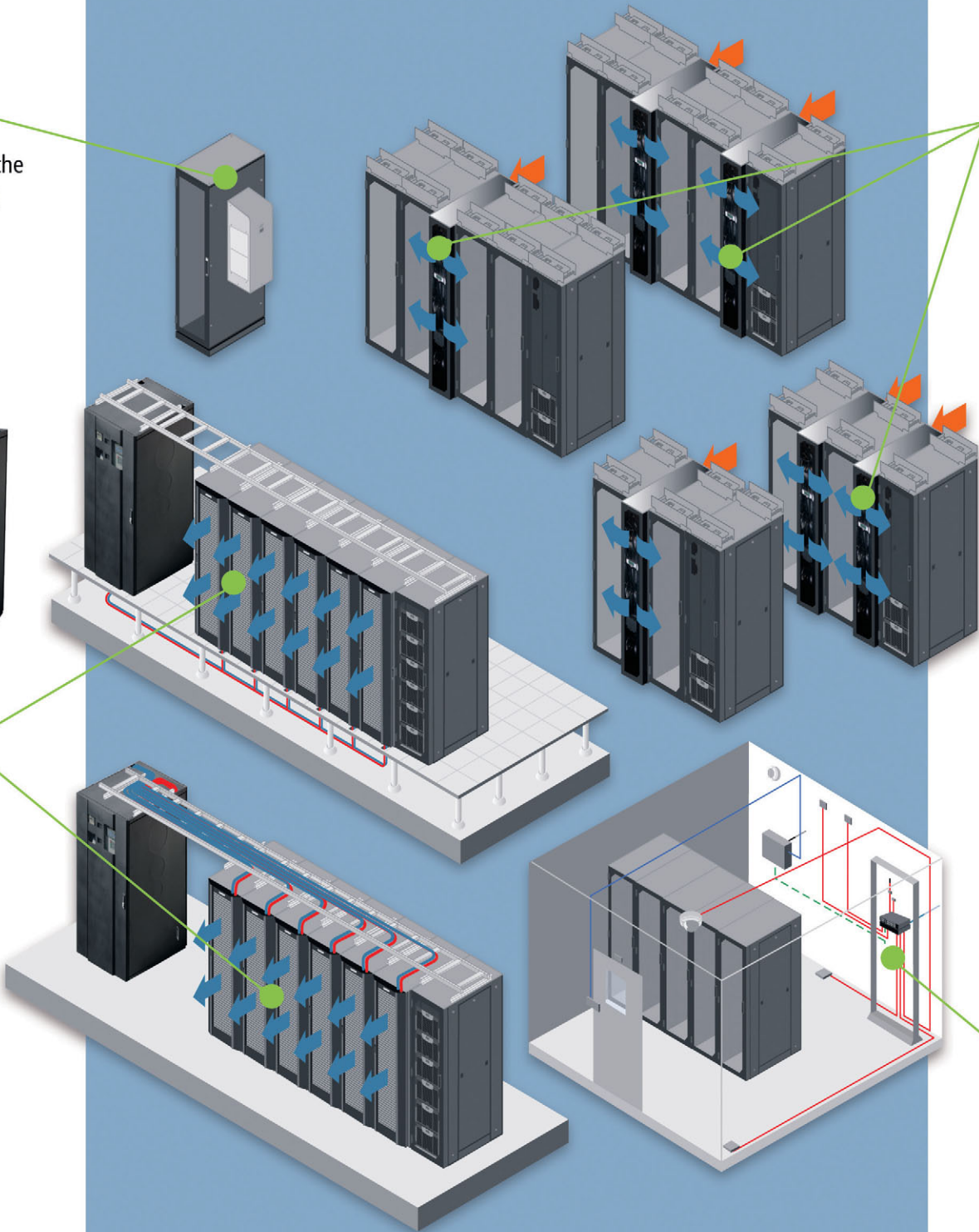
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SC815TQ-600CB
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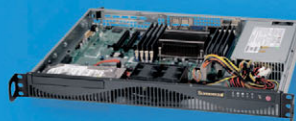
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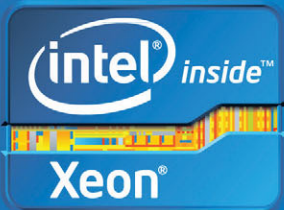
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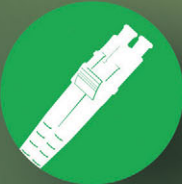
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- kW Hour Meter per Outlet
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- Fail Functional Design



Metered Outlet - MRP

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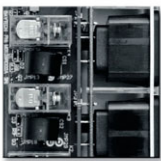
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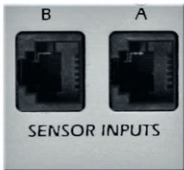
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TH 1 TH 2

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A: 9.2
B: 11.8
kWh: 2.32
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T1: 65.0 °F
T2: 70.0 °F

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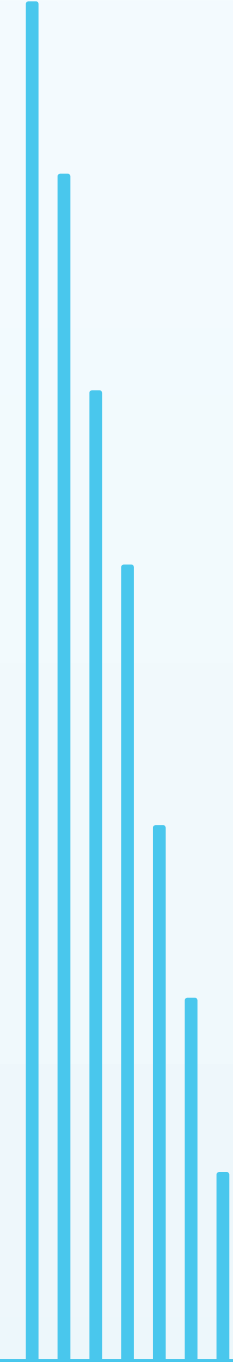
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■ Latest Reports On PC Market Spark Concern About Future

Over the past few weeks, there's been a lot said about the decline in the PC market. Prognosticators have offered a number of thoughts, including the death of the PC and the beginning of the end for nearly every manufacturer that has its roots in desktop computing.

Here's a look at the first-quarter numbers from IDC and Gartner that reignited all the attention:

- 
- Worldwide PC shipments totaled **76.3 million units**, down **13.9%** year over year. That's worse than the forecast decline of 7.7%, according to IDC.
 - Gartner reports worldwide PC shipments of **79.2 million units**, down **11.2%** from a year ago. That's the first time since 2009 that shipments have been less than 80 million units.
 - Price, component supply**, and a **weak reception for Windows 8** overpowered the PC industry's push for touch capabilities and ultraslim systems, IDC reports.
 - Demand for **ultramobiles** was slow, Gartner states, as prices are still relatively high. The research firm notes that **new models with more aggressive prices** should reach the market in the second half of this year.
 - Restructuring** and **reorganization** efforts underway at leading PC manufacturers have magnified the impact of slow demand, IDC states.
 - IDC reports the United States market saw PC shipments **fall 12.7%** year over year and **drop 18.3%** from the fourth quarter 2012.
 - Gartner reports **14.2 million units** shipped in the United States, **down 9.6%** from a year ago, marking the sixth consecutive quarter of declines.

"At this point, unfortunately, it seems clear that the Windows 8 launch not only failed to provide a positive boost to the PC market, but appears to have slowed the market."

-Bob O'Donnell, IDC program vice president, clients and displays

"Unlike the consumer PC segment, the professional PC market, which accounts for about half of overall PC shipments, has seen growth, driven by continuing PC refreshes."

-Mikako Kitagawa, principal analyst at Gartner

■ IDC: Tablets Driving Force Behind Growth In Device Shipments

There's little denying that 2012 was a good year for tablets, and 2013 is shaping up to be even better. The latest information on smart connected devices from IDC shows that worldwide shipments of such devices, which include tablets, notebooks, desktops, and smartphones, were up more than 29% last year. More than 1 billion smart connected devices were shipped in 2012, with a value of about \$577 billion. Tablet shipments grew 78.4% year over year, to about 128 million. IDC predicts that tablet sales will surpass desktop PC sales this year and will surpass notebook sales in 2014. Tablet shipments are expected to grow 48.7% this year, smartphone shipments should be up about 27%, and portable PC shipments should be up about 1%, while desktop PC shipments will be down about 4%.

■ Gartner Updates IT Spending Forecast

IT departments worldwide will spend about \$3.8 trillion this year, up 4.1% from last year. In making the prediction, Gartner Managing Vice President Richard Gordon says that, while the United States avoided the fiscal cliff, other factors such as the sequestration, Cyprus' debt burden, and fragile business and consumer sentiment throughout the world have lowered expectations. "However, the new shocks are expected to be short-lived, and while they may cause some pauses in discretionary spending along the way, strategic IT initiatives will continue," he says. Gartner expects spending on devices (PCs, tablets, mobile phones, and printers) to be up 7.9% from 2012. Spending on data center systems will be up 3.7%, enterprise software spending will be up 6.4%, and spending on IT and telecom services will be relatively flat.

■ Yet Another Sign Smartphones Are Taking Over

The mobile phone category is being increasingly dominated by smartphones. The latest research from Display Search emphasizes the trend, showing that 738 million smartphone displays were shipped last year for a year-over-year growth of 42%. At the same time, shipments of mobile phone displays were down 2%. Because there's still a big portion of buyers left to upgrade from feature phones, Display Search notes, smartphone display shipments will continue to grow this year. In addition, a number of buyers will want to replace their smaller, low-resolution displays with full HD displays.

Mobile Strategies Must Go Beyond Just The Device

To truly see the economic and productivity benefits of mobile technologies, you need to look beyond which devices are used and re-examine business processes and workforce needs, according to research from CompTIA. The CompTIA survey found that most companies currently are focused on provisioning, securing, and allowing systems and network access for mobile devices. “For maximum benefit, workflow changes will need to be considered prior to evaluating workforce needs,” says Seth Robinson, director, technology analysis at CompTIA. The study found that the majority of enterprises allow employees to bring their own mobile devices to work, with 58% of organizations allowing a mix of both corporate- and individual-liable devices. When employees bring their own mobile devices to work, they also typically want to bring in their own applications and services, CompTIA reports, so mobile device management solutions are increasingly incorporating mobile application management capabilities.



Wanted: Greater Ability To Respond To Changing Needs

Enterprise infrastructure and operations departments have become risk-averse, which is creating problems as business leaders change their views of what IT services are most critical, according to George Spafford, research director at Gartner. Through 2015, just 10% of I&O organizations will be able to accommodate the changes required by the business processes they enable, Gartner predicts. Spafford says I&O leaders need to gather a cross-functional team to review the change management process; this team needs to understand both the organization’s current needs and future direction in order to find the best balance between risk tolerance and the velocity of business change. In addition, I&O leaders need to develop change management processes and models, Spafford says, accommodating constraints related to people, process, technology, and business

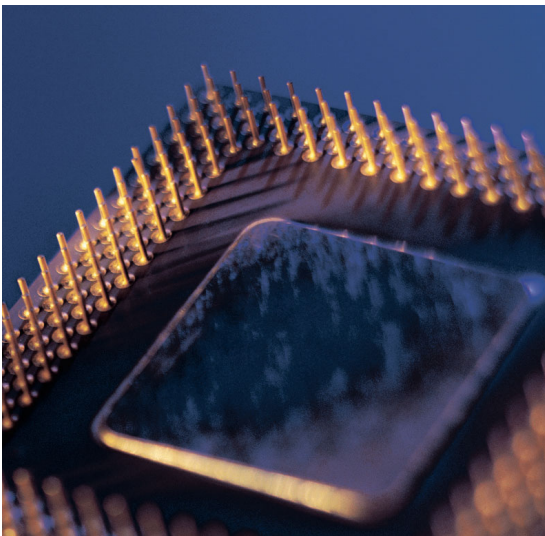
management. Routine scheduled reviews of the process are essential.

Enterprises Not Prepared For Surge In DoS, DDoS Attacks

Denial of service and distributed denial of service attacks are making a resurgence, according to research from IDC. Volumetric attacks, or ones that overwhelm servers and network resources with traffic, rendering them unavailable, will be the predominant type of attack through 2017, IDC reports, with the growing reliance on cloud services and mobile networks adding to the attack targets. IDC expects the market for DDoS prevention tools to have an 18.2% CAGR through 2017, with makers of anti-DDoS products and services working to address the evolving nature of these attacks. IDC notes that volumetric attacks overwhelm the capabilities of security devices such as firewalls and intrusion prevention, potentially making them “unwilling allies because they are unable to separate legitimate from illegitimate traffic.”

Gartner: Most Social Media Initiatives Fail To Deliver Value

Just 10% of enterprise social collaboration initiatives succeed. This sobering statistic from Gartner results because too many organizations take a “provide and pray” approach that “provides access to a social collaboration technology and prays something good comes of it,” says Anthony Bradley, group vice president at Gartner. “The underlying reason” for the low success rate, Bradley says, “is usually that the organization did not provide a compelling cause around which a community could form and be motivated to provide their time and knowledge. In other words, purpose was lacking.” To help ensure the success of social media activities, you need to identify and define the community you’re trying to target and then determine the nature of the collaboration and desired business outcome. A good purpose will motivate people to participate, attract enough people to the community to deliver robust content, and have a clear business outcome, Gartner reports.



Semiconductor Revenue Down

Citing “serious disruption” in the computing, wireless, consumer electronics, and automotive electronics sectors, Gartner reports that worldwide revenue in the semiconductor market was down 2.6% last year. Steve Ohr, research director at Gartner, says that excess inventory levels also contributed to the lack of market growth. Revenue for the top 25 semiconductor manufacturers was down 2.8%; those top 25 manufacturers accounted for 68.9% of total market revenue.

Organizations Plan To Increase Security Spending

About half of companies with 100 or more employees plan to increase the amount they spend on information security this year, according to Enterprise Strategy Group. Of the remaining organizations, only a small percentage plan to decrease their spending, with the rest expecting spending to remain the same as 2012. Jon Oltsik, senior principal analyst at Enterprise Strategy Group, says the prediction may be conservative. “ESG’s survey was conducted at the end of 2012—a time when many businesses in the U.S. were worried about how the ‘fiscal cliff’ would affect their organizations. With the fiscal cliff evaded, organizations may be more willing to make information security investments.” The study found that more than half of organizations will make significant investments in network security during the next 12 to 18 months, primarily investing in newer tools such as next-generation firewalls and advanced malware detection/prevention gateways.

Mobile Banking, Tablet Style

Along with the growth in tablet sales and usage, it only makes sense that consumers would be using the devices in new ways. A report from Juniper Research shows that, by 2017, about 200 million people will be using transactional tablet banking services. That’s about 19% of all mobile banking customers. Report author Nitin Bhas says that consumers often prefer to manage bill payment and transactions via tablet devices rather than smartphones.

Server Refresh Cycles

Know When & When Not To Replace Servers

THE THING ABOUT SERVERS, says Dick Csaplar, Aberdeen Research Group senior research analyst, is “they break; they don’t degrade.” In other words, performance generally continues at the same rate over time. What is more likely to determine that a server refresh is necessary is when new demands are placed on a server or the cost of maintaining a server outweighs its usefulness. Being able to recognize the signs of such occurrences, however, isn’t always easy. The following details issues related to server refresh cycles, including risks associated with extending server life spans and knowing when a refresh is absolutely necessary.

✓ *Make Sense Of Cycles*

“I’ve been in hundreds of data centers in my life, and I can tell you that they try

to keep servers running as long as they can,” Csaplar says. “Once you have an application up and running and it’s running fine and users are happy, you have so many other challenges in your life that going back and, say, migrating that application to a newer server, you’re just not going to do it.”

Typically, three years is the expected life span for servers—something you can tell, Csaplar says, because “most servers are sold with a three-year warranty.” Although companies can buy warranties extending into years four and five, he says, “the warranty price skyrockets” because vendors have to keep older drives, CPUs, memory boards, and other parts on hand.

The cost of warranties is the real driver of server turnover, he says, as well as the modernization of servers. “It’s not that

[servers] aren’t going to function; it’s the cost of the warranty and keeping them under warranty, and you absolutely want to do that, particularly as you go out in time,” Csaplar says. “The second thing is that the rate of modernization in servers today is just amazing.” While getting everything possible out of a server investment is appealing, doing so can eventually cost more in the warranty while “giving up a lot of compute power by not refreshing to the newest technologies,” Csaplar says.

Greg Schulz, senior advisor at Server and StorageIO Group, says some organizations may move more rapidly with refreshes for reasons related to applications and usage scenarios that take advantage of virtualization. Using virtualization enables bringing in new servers with faster

processors, more memory, and a denser footprint that can satisfy the demands (speed, memory) of newer applications. The result, Schulz says, is “getting more work done in a given amount of space, time, and budget using the same or less energy” while stretching budgets further.

✓ *Know When It’s Time For A Change*

The most common ways companies extend server life spans is through virtualization (for consolidation purposes) and through “transparent re-tiering to align the right server to the given application,” Schulz says. Adding more and faster memory and storage and upgrading IO and networking adapters are other ways. Eventually, however, there is a diminishing return by using an older server because



of the cost to power and cool it compared to the benefit it’s providing, Schulz says. Additionally, ongoing maintenance and software, firmware, interoperability, and support can be negatives. “For example, with more software and tools relying on 64-bit, older 32-bit servers may be in line for replacement unless there is a continued need for them,” Schulz says.

Exactly when operating expenditures related to servers begin to no longer make sense can vary based on the environment and specific costs, interoperability, and dependencies, Schulz says. The cost of floor or rack space, power (primary and secondary), cooling, memory, IO, storage capacity and capabilities, functionality (32-bit vs. 64-bit), vendor support, and ongoing maintenance are all factors, he says. Generally, replacing a server becomes

absolutely necessary when a company starts missing performance or availability service objectives; experiences increases in service, support, or management activity associated with the server; runs into memory or other constraints; has issues with the server not being able to support current or new hardware; and has a server that’s drawing excessive power.

✓ *Factor In Downtime*

Servers, Csaplar says, are designed to have about 99.5% uptime, which translates to just a few hours of unintended downtime per year. And those hours typically occur later in the server’s life. A condition tied to downtime is how application usage has changed. “It used to be there was one app on one server,” Csaplar says. “You needed a new app, you bought

a new server, and the server was being utilized 20 to 30%.” With virtualization, however, three to 10 or more applications might be on a single server. “So the impact of downtime when that server goes down—and it will—is going to affect far more applications than it would have before,” he says.

Remembering that not all servers are equal, and not all servers are supporting mission-critical applications, can be beneficial. To this end, Csaplar says companies can easily create a process in which they move critical applications to their newest servers and use older servers to support applications that are less important. Csaplar says virtualization can enable such possibilities as configuring settings so that if one server goes down, the application will automatically reboot on another server.

✓ *Tier Applications*

“Everybody should tier their applications,” Csaplar says. The top tier of applications should include those that must stay up and running all the time and get the best server performance available, Csaplar says. These might include CRM and other enterprise performance applications. Mid-tier applications might include such applications as Web browsing and testing and development. At the bottom end would be storage, print, and file, he says. “So obviously you’re going to approach each of the classes of applications differently. Taking an old server and letting it be the print and file share, that’s an absolutely valid strategy because if it goes down, people can live with it,” he says. [E]

✓ *Develop A Strategic Plan*

Greg Schulz, senior advisor at Server and StorageIO Group, says companies need to have a strategic plan for server acquisitions that accounts for the trade-offs of buying lower-cost servers that you replace more frequently vs. buying servers that cost more upfront but have a longer life and can be upgraded. Also keep in mind how applications will grow and evolve, he says. “Perhaps instead of purchasing, look at lease arrangements,” he says, as well as “when and where to use the cloud to complement your physical servers.” Also be sure to spread server replacements out over numerous years in a rotating manner, he says.

✓ *New Applications Often Demand Newer Servers*

New applications “tend to be written to take advantage of large amounts of computing cycles,” says Dick Csaplar, Aberdeen Research Group senior research analyst. “They expect to have a lot of computer power that can be allocated to them, including lots of memory. So if you’re trying to upgrade applications, the applications may overwhelm the computing power of an older server.”

BONUS TIPS:

✓ *Heed The Risks*

Dick Csaplar, Aberdeen Research Group senior research analyst, says downtime is the biggest risk of extending a server’s life. Depending on the case, a fault-tolerant server with total redundant hardware might make sense so that if a hard drive or power supply failure occurs, “there’s another one that just keeps going so there literally is no application downtime.”

✓ *Do More With Less*

Greg Schulz, senior advisor at Server and StorageIO Group, says because “there is no such thing as an information recession, organizations need to boost their return on innovation (the new ROI) by doing more with what they have,” which can include leveraging faster, denser servers that can do more work per watt, enable room to grow, and remove cost while boosting productivity.

Find Specialty Racks & Cabinets

Know What To Look For & Where To Look When You Have Unique Needs

NOT ALL DATA CENTERS are created the same. Some, for example, operate under unique conditions that require special equipment, including specialty racks and cabinets. Here’s a look at what options are available and how you can identify those situations and environments that might justify purchasing them.

Spot The Signs

The first step in the process is to identify whether you have a need that a specialty rack or cabinet can fulfill.

“A specialty rack or cabinet is typically going to be more pricey than a standard model,” says Kristen Speranza-Diamond, vice president of Hergo (888/222-7270; www.hergo.com). “Before making that investment, it is important that the user has a

clear idea of the problems that currently exist and how this specialty solution is going to assist them in clearing those obstacles. Will this product prove to be an effective, quality solution toward meeting my end goal?”

For enterprises still in the planning phases of designing a layout for new data center space, Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says reviewing the topology will help determine if a specialty cabinet or rack is required.

She adds that in the early phases, asking questions such as if the company foresees having excessive cable bundles in particular areas and if a neater, more efficient, large-scale power solution is being considered “will help you accommodate your data center for ease of management and future growth.”

If you are attempting to improve on the current data center setup or have a particular area of concern (insufficient cooling, cable clutter, etc.), “these issues can often be determined by how well your equipment is operating, how easy it is for you or your staff to troubleshoot issues, or a visual assessment,” she says.

Common Scenarios

Although standard racks and cabinets will serve most data centers needs, Gina Dickson, director of infrastructure products at Black Box (877/877-2269; www.blackbox.com), says there are four common scenarios where you’ll want a specialty rack or cabinet: environmental conditions, noise, space considerations, and cooling.

In addition to those, Viars says certain topologies call for IT to drop extremely large

Key Points

- Numerous situations can create a need for a specialty rack or cabinet.
- Cabinets and racks featuring network cable management, power distribution, and water cooling characteristics are among the most popular.
- Consulting a knowledgeable sales representative is arguably the best place for companies to begin.

bundles of cable into one rack or cabinet. Sometimes, these cable bundles can be so large that a standard cabinet cannot accommodate them. In other cases, Viars says, managers might need specialty cabinets to



provide efficient cooling and power in an environment that doesn’t have raised flooring or one that operates under space constraints.

Know What Is Available

Several types of specialty racks and cabinets have emerged as the most popular.

Network cable management. “These racks and cabinets are specially designed to accommodate applications with higher-density cabling,” Viars says. Such racks feature additional space for handling cable bundles built into the sides of the rack, she says, which creates a wider rack that still maintains standard 19- or 23-inch rack mounting. Enterprises can purchase these with cable management built-in or their own preferences. “These racks are especially beneficial for switch applications

where you might have bulk cabling coming off of the front of the rack and routed toward a single side,” she says.

Power distribution. These provide flexibility in providing power to equipment. “A common issue that can occur when providing power down a row of cabinets the traditional way is that it requires a large quantity of seal-tight cables to be run under the raised flooring to the cabinets,” Viars says. “Not only are these cables expensive, but in the larger quantities, they also restrict airflow underneath the floor, reducing the overall effectiveness of your cooling.”

In addition to providing a neater system that makes maintenance easier and less expensive, using a power distribution enclosure can also “be the way to go if your data center doesn’t have raised flooring,” Viars

says. “This solution will significantly reduce the number of cables that would need to be run in overhead cable trays.”

Cooling. “Even in the most well thought-out layouts, data center managers still have to address issues caused by hot air recirculation and uneven cooling,” Viars says. “This can be especially troublesome when trying to integrate new equipment.”

Dickson says there are cabinets that combine equipment mounting and fans or cooling, which can provide a closed-loop cooling system that includes a sealed NEMA-rated cabinet and an AC unit. “These are a great alternative for non-data center locations such as IT closets or server rooms,” she says.

Viars says water-cooled enclosures are “ideal in situations where you are trying to integrate a high-density cabinet into your

layout or if you have issues keeping a particular cabinet cool with your current solutions.”

Other common options. Dickson says other cabinet types include wallmount versions designed to help save floor space or cost and sound-dampening cabinets for use in areas where people are present or working. “They dampen equipment noise and, in many cases, have great aesthetics design to look like office furniture,” she says.

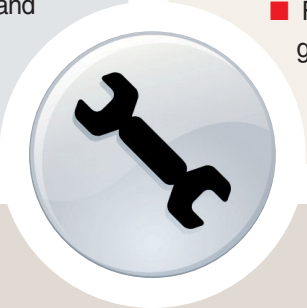
Speranza-Diamond adds co-location cabinets to the list. Such cabinets are built for environments that need separate, secure equipment bays for multiple users. Two other options, she says, are seismic cabinets that can withstand earthquakes or rigorous movement and NEMA-rated outdoor cabinets that are manufactured with special corrosion-resistant finishes to hold up against outdoor elements. [P](#)

Top Tips

- ✓ **Don’t skip security.** For enterprises that experience a considerable amount of traffic passing through their data centers, including by visitors from outside the company, a specialty enclosure that features a locked cage or other integrated, security-minded features can be appropriate.
- ✓ **Look at thermal control options.** One possibility for data centers in need of thermal management is interchangeable doors that provide thermal-control abilities built in. Options include those that IT can order as a new rack and those that fit over existing racks in a retrofit fashion.
- ✓ **Go vertical.** Many data centers find themselves faced with the dilemma of needing to add equipment to their data center operations but lacking the actual data center space to accommodate more equipment. For such situations, there are racks and cabinets available that are deeper and also provide the ability for IT to expand upward, offering the means to use existing space in a more efficient manner.

Action Plan

- Assess your current data center situation in terms of physical and configuration traits.
- Review the various topologies that might be at play.
- Note any concern areas, including security, heat, and cabling.
- Speak with a sales representative about your specific layout and needs.
- Factor in future data center growth, equipment additions, and other factors.



Get Started

The best starting point for an enterprise to determine if a specialty rack and/or cabinet is necessary is to speak with a sales representative who is well-versed in this area. “They’ll be able to assess your current situation and determine whether a specialty cabinet might be something you’ll want to consider,” says Laura Viars, senior sourcing specialist at Rackmount Solutions (800/352-6631; www.rackmountsolutions.net).

Because there are numerous factors involved in determining what equipment will work best for any particular application, she says, “receiving some professional advice will certainly help.” She suggests having a layout of the enterprise’s current setup available for the sales representative to review, which will aid in pinpointing the ideal solution. Because many specialty cabinets are built to order, she says, “you’ll want to make sure that any measurements that have been taken are accurate and that you’ve provided your sales representative with any and all information that might be relative to the project.”

BYOD & Its Impact On The Corporate Network

Strategies For Granting Access To Employee-Owned Devices

ADOPTING A BYOD POLICY that enables employees to use their own mobile devices in the workplace opens up any number of potential benefits, including the likely possibility that employee productivity will increase. But implementing a BYOD policy also presents numerous potential headaches for IT, including various issues related to those devices accessing the corporate network. Knowing what possible issues you'll face, along with strategies IT can use to go about granting network access, can help ensure you'll be able to manage secure access.

✓ *Know What To Expect*

Plenty of information has been produced in recent years documenting the positives

of allowing employees to bring their devices into the workplace. Plenty has also been written concerning the need to implement a strong, well-thought-out BYOD policy first to addresses the numerous issues created by a BYOD strategy, including issues related to corporate network access.

Rob Enderle, president and principal of The Enderle Group, says the most common issues involve access, setup, and interoperability. Of these, Enderle says access is likely the most important, as a user can cause the most damage by using a device in an unauthorized fashion to access information or do harm.

"Assuring that the introduction of a new device doesn't compromise security, either physical (camera or microphone) or

electronic, becomes the greatest priority as a result," he says.

Christian Kane, analyst, enterprise mobility, infrastructure, and operations at Forrester Research, says data security is absolutely the most important issue concerning network access. "It's really all about access to the internal network and corporate resources. Every new device that comes in is Wi-Fi-enabled, and users have credentials to get into that network," he says. Companies previously allowing notebooks and Wi-Fi access "now have to deal with a huge amount of new, unmonitored, and potentially unsecured devices trying to connect."

Beyond security issues, companies may need to deal with capacity issues on their internal networks as more devices begin entering

the workplace and connecting to the network. This issue, he says, can be somewhat influenced by tiered data plans from carriers.

✓ *Don't Put Your Company At Risk*

When forging an overall company stance toward BYOD and network access, Enderle says the issue boils down to not putting the integrity and assets of the company at excessive risk. Additionally, the benefits of allowing network access should exceed the likely liabilities, he says.

Kane says a "free-for-all" approach isn't advised because of issues such as data security. Many tools are available that grant IT better access control over networks, he says. "Companies should allow only approved



devices with the proper security configuration onto the network,” he says.

Individual companies may have their own nuances in their security policies, he says, but they must understand the associated risks of allowing network access to unsecured devices. This doesn’t mean companies should block all BYOD traffic, he says, as employees often seek access to be more productive. “If companies offer a secure way for these devices to connect to resources and also offer guest network access for unsecured devices, they can often cover the majority of these use cases,” Kane says.

✓ *Weigh Platform vs. Owner*

A question that IT will likely ponder is what is more important when it comes to

network access: the device’s platform or who owns the device.

Kane believes we’re at a place where both are extremely important, but he leans toward who owns the device. Though differences among device platforms exist, he says, “they aren’t as major as who ultimately controls [device] usage. With a corporate-owned device, you set the environment, and the user can only do so much. With BYOD, it’s really somewhat of a compromise but with the end user in ultimate control.” Kane says it isn’t the end user’s job to focus on IT and security, thus the user likely won’t be as dedicated to doing so.

Enderle says the answer comes down to control and assurance. IT should base its choice on whether it can reasonably secure

the device, he says. “If this means they have to take control of it, then that becomes a requirement, but this has to be about security and not about a typical management need to control everything they touch regardless of need. Line managers and employees can generally tell the difference.”

A platform such as Android, Enderle says, will likely require a high level of control, as it is easily rooted. Further, Enderle says, some Android vendors (such as unlicensed foreign dealers) “should be barred outright because their phones likely have already been rooted prior to the user acquiring it.”

✓ *Manage Mobile Devices*

IT has numerous strategies to consider when granting network access to a variety

of devices. Kane says deploying mobile device management (MDM) tools can help manage the flow of data and address some connectivity issues related to BYOD. “Using proper networking tools that monitor traffic and potentially using a guest network should cover major issues,” Kane says.

Enderle says another possibility is using a whitelist network access process in which “each device is allowed on a case-by-case basis based on company policy and the ability and resources available to assure its security.” Companies can charge this resource back to the line department providing a path to access but should ensure the line manager can verify the cost is worth the benefit. [P](#)

✓ *Discover The Device*

Using a mobile device management (MDM) solution is one way to uncover information about a device’s history, the data on it, and its general stability, says Christian Kane, analyst, enterprise mobility, infrastructure, and operations at Forrester Research.

“For history, there really aren’t that many tools available which make things difficult. You also get into tricky issues around employee privacy. The same really goes for data,” he says. “There are some better data controls available, but more often these days, attention is being focused on control, history, and flow of corporate data to the device rather than what’s on there as a whole.”

✓ *Limit Access*

Rob Enderle, president and principal of The Enderle Group, says managing all the devices that are accessing the corporate network is generally something best done using a comprehensive toolset.

“Few devices are configured for dual-factor authentication, which means it’s always likely a device could be used in an unauthorized way from a hostile entity that found or stole [the device],” he says. “This means perimeter security won’t be adequate, and the security solution will need to be pervasive and assume the perimeter will be penetrated. It also suggests that access to very secure systems should be very limited from mobile devices and only allowed if there’s no reasonable alternative of a more secure client device.”

BONUS TIPS:

✓ *Treat Users Differently*

Depending on the enterprise, IT must deal with different compliance requirements and data-handling procedures. Although some users need and want access to sensitive data, this isn’t true of all employees. Some may only need access to corporate email, certain applications, or information not involving sensitive data or intellectual property. One approach for granting access to sensitive data to those who need it is allowing only on-premises access (not remote access) via the organization’s wireless network.

✓ *Block The Jailbroken*

When contemplating strategies for uncovering information about a device prior to allowing network access, Rob Enderle, president and principal of The Enderle Group, suggests blocking jailbroken devices. He also advises running a scan for known malware and determining if security software is installed. “In addition, access should at least be two-factor, helping to assure the person using the device is authorized to use it. Keyloggers represent the greatest threat, and assuring one isn’t running is a big requirement,” he says.

SIX QUICK TIPS

Lighting In The Data Center

Focus On Newer, More Efficient Technology & Implement Conservation Strategies

MOST DATA CENTERS can become so focused on the efficiency of servers and other equipment that they completely forget to look at how lighting can affect power consumption.

Although it's true lighting accounts for only a small percentage of total energy usage in a data center, that doesn't mean you can ignore it. There are some simple tweaks you can make to your existing lighting approach to improve efficiency to some degree, but you can also opt for large-scale systems that give you more control over lighting than you may have thought possible. Either way, it's important to give some attention to lighting in the data center, because when it comes to improving efficiency, every little bit helps.

✓ *Switch Fluorescent Bulbs For LEDs*

Many companies have relied on traditional fluorescent bulbs both in the office and in the data center for years. Because these bulbs are less expensive than some newer alternatives, and most facilities were built with traditional bulbs in mind, data center managers decide to maintain the status quo.

But fluorescent bulbs are often inefficient, meaning that even if you save money upfront by purchasing large amounts in bulk, you're probably wasting money by using more energy than necessary. LED lights are a much better alternative because not only are they often

brighter than fluorescent bulbs, but they can also save you money in multiple ways.

"LED lighting is a great way to increase energy efficiency in the data center," says Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net). "LED lights are not only energy efficient, but they also run at lower temperatures than fluorescent lighting does, rewarding you twofold with lower lighting costs as well as lower cooling costs."

For companies that are focused on green energy initiatives or like to follow best practices from The Green Grid, Viars also points out that LED lights can help reduce your PUE number, which will improve the overall efficiency of your data center.

✓ *Consider A Smart Lighting System*

Installing LED bulbs is a great place to start when improving lighting efficiency, but it shouldn't necessarily be your only effort. The Lawrence Berkeley National Laboratory's website (www.lbl.gov) provides quite a few best practices for data centers as well as some that are specific to lighting. For one, the Berkeley Lab recommends that companies use active sensors to shut off lights when a data center is unoccupied as well as occupancy sensors that can automatically detect whether someone is in an area and requires lighting.

The best way to take advantage of sensors is by implementing a smart lighting



system that “offers ultimate versatility for managing lighting throughout the data center,” Viars says. “These Web-based systems can be set to operate either on a timer or in response to occupancy sensors, and they can even be set to operate down to the aisle level by illuminating a specific aisle only when it is in use. These systems also incorporate dimmers, so that you can provide only as much light as you require,” Viars says.

✓ *Balance Efficiency & Adequate Lighting*

One of the biggest worries with implementing more advanced lighting systems is that you might have to sacrifice lighting quality for better efficiency. “It can

be very difficult trying to find a balance between providing sufficient lighting within the data center and keeping energy costs down,” Viars says. “On the one hand, it is imperative to ensure that the aisles are adequately illuminated; poor lighting can cause can cause the technicians working inside the cabinets to make errors due to low visibility, such as pairing the wrong color patch cord to a port. On the other hand, you don’t want your lighting to consume too much power, as that is neither eco-friendly nor wallet-friendly.”


To help overcome this issue, the Berkeley Lab recommends data centers always put overrides near occupancy-based systems so that workers can manage the lighting in unique situations. Plus, the

Berkeley Lab notes that companies should provide task-based lighting, which means that you place light fixtures in locations where employees are working the most. The lighting needs in a data center supply closet are different than those for the main server room, so you need to choose the right lighting for the right situation and always keep efficiency in mind.

✓ *Lights On vs. Lights Off Data Center*

Viars note that different data centers have different lighting concerns. If your data center has a considerable amount of foot traffic and employees are frequently working in and around the equipment, then you may need to have more continual lighting in

place than a data center that is managed remotely. However, both types of data centers may have similar issues, such as leaving enough light for security cameras, so you have to consider what type of lighting system best fits your data center as a whole.

“If you are in a ‘lights on’ data center, you’ll want to heed advice on how to most effectively increase the efficiency of your lighting systems, since you’ll be keeping it lit 24/7,” Viars says. “This is less of an issue in ‘lights off’ data centers. Those IT managers will instead want to lean toward finding ways to make sure that lights are only left on when needed. In these centers, IT managers may wish to have remote access to lighting systems, in case a light is left on once the technician leaves the premises.” 

✓ *Considerations With New Construction*

Building a new data center opens up a world of possibilities for improving lighting efficiency because you’re essentially starting from scratch and can design with lighting in mind.

If your data center is in pre-construction, provide the architect with the planned layout for your cabinets, says Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net). “This will allow them to align the overhead lighting with your aisles, ensuring that the light reaches the areas it needs to with minimal obstruction.” By creating an optimal layout with well-placed lighting fixtures, you may be able to use fewer lights and cut down on energy costs.

✓ *Take Advantage Of Bi-Level Lighting*

In addition to sensors and overrides, the Lawrence Berkeley National Lab recommends that data centers take advantage of bi-level lighting solutions. These systems take task-based lighting to new level by providing different brightness levels depending on the situation.

During periods of low usage or normal foot traffic, you might have one lower setting because detail work is unnecessary. But then you can have a second, higher power setting if employees are performing a particularly complicated installation. You could set up a smart lighting system to control the bi-level lighting systems automatically but also add a manual switch so employees can decide for themselves how much lighting is needed for a certain task.

BONUS TIPS:

✓ *Use Spot Lighting*

Instead of making the entire data center brighter, Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net) says companies should consider implementing rack-mounted lights that “consume little energy and resolve any trouble areas you might have.” Although she warns that these types of lights “will not affect the overall efficiency of your data center,” they can help “reduce the chance of human error.”

✓ *Go Beyond The Lights Themselves*

To improve lighting, you can do more than just change bulbs and systems. Consider swapping out your physical storage units. “If you can, opt to go with white cabinets rather than black ones,” Viars says. “Since black is non-reflective, it is only a further detriment to a poorly lit area. White cabinets, however, will reflect light and allow for higher visibility in lower-light areas.”

Simple Ways To Maximize The Value Of Virtualization

Know Whether Deployments Are Giving You A Return On Their Investment

WE'RE PAST VIRTUALIZATION being a hyped technology promising many benefits. Today, virtualization is established, and the payoffs it can deliver concerning reduced physical servers and power and energy consumption and bolstered IT efficiency and productivity are well known. Research indicates most enterprises have adopted virtualization in some form. The question now is if enterprises are seeing the ROI they expected and are maximizing the value of virtualization investments. Here's a look at some mistakes that result in lower ROI or less value and tips to help maximize the value you're getting.

✓ *Just Do It*

For enterprises that still have concerns about virtualization and whether it is worth

the investment, the answer seems to be a resounding yes. "Customers who embrace virtualization and understand its value/limitations often have a great perspective on what virtualization means to the organization," says Mark Margevicius, research vice president at Gartner. He hails virtualization as a "transformational technology" that has generated value in areas of cost, ROI, operations, efficiency, scale, and performance. "By all measures, virtualization is a grand-slam success for nearly all customers," he says.

Dick Csaplar, Aberdeen Group senior research analyst, virtualization and the cloud, says Aberdeen research shows that as of April 2012 about 55% of all applications were deployed on a virtualized server, though they tended to be smaller, tier 2-type apps. Tier

1 apps (SAP, email, database, and mission-critical) are virtualized to a much lower degree, he says, but "even at this rate [virtualization] has provided very dramatic results, especially reducing the number of servers in the data center." Although "virtualizing the remainder" won't provide as dramatic results, he says, it's "definitely worth the effort."

Csaplar notes that storage virtualization is less widely deployed and can take many forms, plus returns vary depending on what enterprises do. Storage virtualization can help companies struggling to deal with "exploding" amounts of data, although data tiering, decompression, and de-duplication can also produce significant savings, he says.

"Desktop virtualization is the least widely deployed and generally has been

implemented for only a portion of each company's workforce," he says. Benefits here relate to enhanced employee efficiency, rather than dramatic savings on new hardware or reduced head count.

✓ *Quantify The Value*

Margevicius says quantifying the value of virtualization efforts depends on the implementation. Some companies do little quantification of value, while others adopt virtualization as best practice for IT operations, he says.

Initially, enterprises built server virtualization projects on cost savings associated with deploying fewer servers, he says. Storage virtualization efforts were built on the same premise, "so real dollars can be saved," he says. Typical ROI from deployments can vary



greatly. A common thread among nearly all customers, Margevicius says, is “a better operational state is derived from virtualization, so that flexibility, redundancy, failover, and business continuity are common outcomes from virtualization projects.”

Csaplar says typical ROI regarding virtualization deployments fluctuates greatly based on company size, age of existing infrastructure, and the degree of virtualization implemented. “It’s safe to say that with so many companies deploying server virtualization, it gives a very positive return given the wide and deep deployment,” he says.

When enterprises deploy server virtualization to the oldest servers with the lowest utilization, he says, they generally expect a “10-to-1 reduction” in server numbers in their

data center,” Csaplar says. The total lessens as applications grow larger and installed servers are no longer old and slow. Companies can expect better operational performance, “as deploying new applications to a virtualized server is much faster, and dealing with managing the infrastructure is much easier,” he says.

✓ *Look Ahead*

Margevicius says all aspects of IT infrastructure are under consideration for virtualization, including storage, desktops, applications, and the network. Csaplar expects the next wave of data center transformation to involve the private cloud space.

“Virtualization, instead of widespread server sprawl, can create widespread VM sprawls,” he says. Private clouds bring


these VMs under one management umbrella and give IT managers tools to charge the organizations gaining the benefits with the right financial charges. Private clouds also empower end users to self-administer their own server infrastructure and give them “immediate returns and responsibility for their charges.”

Margevicius says, “What the cloud has done for virtualization is create massive economies of scale whereby customers who leverage cloud typically receive best-in-class pricing and service from providers.” The cloud’s future contribution to virtualization, Csaplar says, will include enabling IT to migrate from “being a cost center and supplier of IT computing producer” to being a business partner that brokers computing

cycles from various sources (internal and cloud-based).

✓ *Avoid These Mistakes*

A tendency when looking at ROI in any area is focusing only on costs. Margevicius says those that do “are selling themselves short” on virtualization’s value. Virtualization, he says, is really about “transforming how organizations provision IT resources far more effectively and efficiently, which in turn yields real business value outcomes.”

Another mistake is not recognizing that VM sprawl can replace server sprawl. “It’s so easy to deploy new VMs that they get spun up but never taken down,” Csaplar says. “Companies need to have lease time limits that set kill dates for expired projects.” 

✓ *Prepare Yourself*

Most sources on the subject agree that a majority of enterprises are using virtualization to some degree, including deploying applications on virtualized servers. Nearly all sources report the results of doing so can return benefits across multiple areas, including benefits that can be categorized as being dramatic.

“The easy stuff is done,” says Dick Csaplar, Aberdeen Group senior research analyst, virtualization and the cloud. Moving forward, he says, benefits in desktop virtualization, for example, won’t necessarily relate to savings tied to reducing equipment but have more to do with improved efficiency.

✓ *Know The Costs*

Data center managers should expect senior management to seek out more information concerning the costs of virtual installations, according to an article written by Forrester Research senior analyst Dave Bartoletti.

Data center managers, for example, should take the time to compile information such as the incremental costs of deploying a new virtualized application in a present virtualization environment and tracking annual costs related to managing and maintaining a VM. Bartoletti writes that data center managers should be able to articulate their virtualization workload unit costs if asked to defend them.

BONUS TIPS:

✓ *Test, Test, Test*

When it comes to virtualization deployments, Mark Margevicius, Gartner research vice president, suggests that enterprises “test, test, and test some more.” In addition to testing, Margevicius says, employing processes and tools is also key to realizing successful implementations, “as the ‘how’ and ‘with what’ to manage virtual environments are very different than non-virtualized environments.”

✓ *Investigate Private Clouds*

Dick Csaplar, Aberdeen Group senior research analyst, says although small and midsized companies have been quick to adopt server virtualization, they have been slower to adopt private clouds. He recommends companies investigate what this form of technology can do and offer in terms of a company taking “the next step in the data center transformation.” To maximize virtual deployments, Csaplar suggests researching and selecting a private cloud infrastructure management application that can transform a highly virtualized environment into a private cloud.

Troubleshoot Backup Problems

What To Do Before & After Issues Arise

THE FIRST STEP IN PROTECTING an enterprise’s data is to consistently back it up. The next step is realizing that at some point, something will go wrong with those backups, and you’re going to need to troubleshoot the snafu. You need the right backup systems and troubleshooting tools, processes, and policies to survive the process.

✓ *Understand Why Backups Fail*

Greg Schulz, senior advisor with Server and StorageIO Group, says backups can fail for many reasons, including issues tied to media (tape, disk, tape or disk drives, etc.), backup software, network and security, application settings, and cloud-based solutions. More important

than understanding why backups fail, however, is determining where the “real problem” resides, Schulz says.

“Part of troubleshooting comes back to what is the problem? What caused the problem, but more importantly where is the real problem?,” he says. For example, on one level a disaster (fire, flood, dropped drive, etc.) may have damaged the backup media, but the data may still be recoverable. On another level, however, you may find that although you can still read, copy, and work with the data, you can’t actually open a file because it’s in need of repair.

“You need to have the insight to know where the problem actually is. What’s the real problem, so you’re not spending

your time chasing ghosts or false problems,” Schulz says.

According to Mike Karp, vice president and principal analyst with Ptak, Noel, and Associates, the No. 1 problem related to backups is that data isn’t always recoverable from backups. This can be caused by numerous reasons, he says, including media failure, incomplete backups that are missing data (“typically vital”), missing tapes, and an operator error during the backup process.

✓ *Verify Backups Work*

One thing that many data center and IT managers forget, Karp says, is that “when all is said and done, backups are not the important issue; what are

important are recoveries.” Karp says any site can perform backups readily enough, and in fact, many do backups reasonably well. “But how well do they know that what has been written to the tape is actually readable? This is simple enough to determine at the time of the backup,” he says. Every backup program, he says, has a “verify” switch that’s usable during backup, “but most places don’t use this because of the constraints imposed upon them by backup window limitations. They simply run out of time and hope for the best. Sometimes the best isn’t good enough,” he says.

Restoring a backup and trying it out, Schulz says, is the “only way you can have certainty and confidence that you’re



going to be able to use what was backed up or copied,” no matter what type of storage you’re using for backup—even in the cloud.

He says enterprises also should verify at all different backup layers that “whatever tool you used to copy or back up or move the data is able to read the data back.” Whether that data is a Word document, PDF, PowerPoint, database, or any other format, “verify you can restore it and move it to a different safe area and that you can actually use it,” he says.

✓ Automate The Backup Process

One way to simplify backup troubleshooting chores, Karp says, is to begin

the process of moving from tape backups to disk-to-disk backups if you haven’t already. “Restorations from disk-based backups are far more reliable, and in most cases are easier and faster, as well.”

Further, he says, “automate your backup processes sooner rather than later, and if you are considering moving to a new backup solution, make sure that it not only automates the process but automates it according to your site’s established set of best practices (assuming you have them).”

Schulz adds that for tape-based systems, tools available from various vendors can plug into an environment to perform automated testing and verification. “In the case of using a disc-based

appliance—dedupe to disk, any sort of disc-based backup and archive appliance—this can be as simple as setting up scripts (if your backup tool doesn’t support it automatically) to periodically test something to see if it’s still accessible or readable or to do a comparison check.”

✓ Prioritize Data According To Use

Schulz says part of making verification and testing processes simpler is leveraging technology that makes it easy to back up and protect data but that also makes it easier to restore an individual file or individual table and verify it. Such technologies include

de-duplication, compression, tiering, and policy-based management tools.

Today, Schulz says, “we have to support more data and protect more information and do it within the same or maybe smaller budget but without compromising on availability. The way to do that is avoid treating everything the same.”

In other words, Schulz says, “recognize that there’s some data that doesn’t change very frequently, so why are you backing it up frequently?” Conversely, he says, some data changes frequently and is very important, “so maybe you should be backing it up more often.” Schulz suggests putting data that doesn’t change often on a different frequency, retention, or cycle. [P](#)

✓ Reduce The Data To Back Up

“Backups are always easier when there is less data to manage,” says Mike Karp, vice president and principal analyst at Ptak, Noel, and Associates. Use both data de-duplication and data compression software, he says, to reduce how much data is actually moved and how much operator intervention is likely necessary. “These products are proven and offer extremely rapid ROI.”

In addition, make sure the backup solution you choose has in-depth customization options, so you can pick and choose which file types or folders are backed up.

✓ Test Your Backup Troubleshooting

Numerous factors go into determining how often an enterprise needs to test its troubleshooting processes, with the backup media type in use being one of the biggest factors, says Greg Schulz, senior advisor with Server and StorageIO Group. For media, Schulz suggests following and adhering to the manufacturer’s recommendations.

“If you’re using drives that spin down, what does the manufacturer or supplier recommend for periodic spin-ups to make sure if those drives are going to sit spun down for three years that, when you go to spin them up, they’ll actually work,” he says. Schulz also suggests implementing a proactive policy for randomly sampling and checking backup-related components. “If you encounter an error during that random sampling, you may want to check if it’s one-off or during a subsequent sampling, is there another error,” he says.

BONUS TIPS:

✓ Use Email Reminders

Greg Schulz, senior advisor with Server and StorageIO Group, says for backups in especially small environments where tools providing automated backup and testing functionality aren’t feasible, “send yourself a reoccurring task in the email system once a month to schedule a restore job to an alternative location and then check what happened.”

✓ Update Your Mindset

Schulz says a common trait among enterprises that perform backup and troubleshooting tasks well is that they recognize there’s no such thing as a data or information recession. They also realize data and people are living longer and are depending on data longer and there are economic challenges. “They realize simply throwing technology at [backups] is not a complete solution, in particular if you throw new technology at an old problem, you see a new problem that looks like an old problem,” he says.

Enterprises should use technologies in more effective and innovative ways, he says. “You need to go in and, using different tools and techniques across the board, rethinking what you’re going to protect and how often you’ll protect and for how long. Rethinking SLAs with customers, asking the tough question of, ‘What do they want vs. what do they need?’ They want zero downtime, but what are they willing to pay for it?”

Evaluate The Real Costs Of Cloud Computing

Compare The Cloud To On-Premises Storage & Track Accumulative Costs Over Time

WHETHER YOU'RE THINKING about migrating some data and applications to the cloud or you're already fully immersed in the technology, it's important to consider both the short- and long-term costs of cloud services.

Many companies think they can move data to the cloud, consolidate their data centers, and sit back while the savings accumulate. But if you aren't careful, you could end up paying more for cloud storage than if you had stored the data on-premises. We'll clear up some common misconceptions and help you determine the true costs of using the cloud.

Compare On-Premises To Cloud

If you currently only use on-premises storage for your data and applications, then an important first step to evaluating the

costs of a move to the cloud is to determine your cumulative total cost of ownership, says John Sloan, lead research analyst at Info-Tech Research Group.

Sloan says that for most companies, the cost of on-premises solutions will be seen as high, because you have to buy, install, and maintain infrastructure, and the initial costs of the cloud will be low, because you simply sign up for a service and start migrating applications and data almost immediately. But he points out that for many cloud services, "those cumulative costs, especially for an ongoing application you use every day, grow at a faster rate than the onsite version."

Another important consideration is for companies that already host some of their infrastructure with third-party vendors,

because it may seem like hosting provides basically the same service as the cloud.

However, Dave Bartoletti, senior analyst at Forrester Research, says that while both services take away your fixed capital costs and operate the cloud for you, the cloud goes one step further and only makes you pay for infrastructure when you use it. The elasticity and scalability aspects of the cloud could save you more money than a hosted alternative, but you won't know for sure unless you perform an assessment and directly compare those costs.

Understand How Data & Applications Affect Costs

In addition to conducting assessments and comparisons, one way to control whether you save money with the cloud is

Key Points

- When comparing on-premises storage to the cloud, you need to consider both the upfront and cumulative costs.
- Most experts say you shouldn't use the cloud for storing large amounts of data over long periods of time.
- If you're interested in a private cloud, consider a hybrid approach so you can better balance your capital and operating expenses.

to make sure you aren't paying for unnecessary capacity. Sloan says that "from a cost point of view, the cloud really shines



for limited-term projects,” which means that the less time that data spends in the cloud, the better. If you use the cloud for temporary rather than long-term storage, you’re much more likely to cut down on overall costs.

Sloan uses the example of a New York newspaper that wanted to index all of its microfilm, with some images going as far back as the 1800s. The on-premises costs for storing all of that data to create an index would be astronomical, but the newspaper was able to use the cloud to its benefit. The company took all of those images, uploaded them to server instances in the cloud, used Hadoop to analyze and build an index, and then downloaded everything. After the project, the company

“had this nice index that only cost a few hundred dollars,” Sloan says.

Unfortunately for some companies, they only see that there were cost savings with the cloud, but not necessarily how the cloud was used sparingly to great effect.

“Those are the kinds of stories that become legendary, but the one thing about that story is that they didn’t leave the stuff in the cloud,” Sloan says. “They used it over the weekend, built up this huge image storage, ran the algorithm that created the index, and then took it back down again. One of the problems when it comes to putting an application that we use every day in the cloud is you’re not going to have those quick savings, because it’s going to stay there 24/7 from now on, and those prices are going to add up.”

Private Cloud vs. Public Cloud

For security or compliance reasons, some companies can’t or don’t want to use the public cloud. If that’s the case, consider implementing a private cloud that provides the same benefits but is hosted internally.

A private cloud can save companies money because it’s possible to use virtualization and newer equipment to consolidate your data center and run many virtual machines on fewer servers. Bartoletti says if you plan to buy new infrastructure to build a private cloud, you could “bring in convergent infrastructure or cheap commodity storage and servers” to cut down on costs as well.

The problem with the private cloud is that you’re 100% responsible for it, and regardless

of how much capacity you require at a specific time, you will pay for every byte of storage even if it’s not being used. You also have to buy private cloud management software, Bartoletti says, which is necessary to build and maintain a cloud. It’s another upfront cost that a vendor would provide for you in a public cloud environment.

Perhaps the best way to utilize a private cloud is in a hybrid environment. You can store sensitive information on your internal cloud but then store less mission-critical data and applications on a public cloud, with self-service access to both. With a hybrid approach, you can balance your upfront capital expenses with your long-term operational expenses to get the benefits of the cloud and the best possible cost-benefit ratio. [P](#)

Top Tips

- ✓ John Sloan, lead research analyst at Info-Tech Research Group, says that some companies may prefer “cost smoothing or making costs more predictable over time” rather than concerning themselves with long-term costs over three to five years. It can be easier to pay a little over time than incur large upfront costs.
- ✓ If you are already working with an infrastructure hosting provider, you may want to ask the provider if it provides “a cloudier style of consumption model,” says Dave Bartoletti, senior analyst at Forrester Research. With this approach, you may be able to get some of those self-service, elastic cloud benefits without investing in a new service.
- ✓ Sloan and Bartoletti agree that companies need to think about availability, business continuity, and disaster recovery when looking at the cloud. If you need redundancy or data backups and you store them in the cloud, you could effectively double your storage and in turn double your costs.

Action Plan

- Dave Bartoletti, senior analyst at Forrester Research, offers these steps:
- Perform an application assessment to pick the right apps that make sense for the cloud. Apps that fluctuate in scale or are already virtualized are good candidates for the cloud.
 - Do a cost-of-operations assessment for your apps. What does it currently cost to deliver the infrastructure? That’s server, storage, network, data center footprint, power, cooling, and operations costs.
 - Know how cloud services are priced. If you can plan capacity needs in advance, you can save more money. Make a cost-of-operations comparison between your internal costs for an app and estimated monthly cloud costs.
 - Once you’re using the cloud, make sure you start tracking your costs from the beginning. There are tools that can not only help you do the pre-move planning, but also help you optimize your cloud spend and highlight places where you’re paying for instances you’re not using.



Get Started

“The thing that we really hammer on is doing a comprehensive review of total accumulated costs over time,” says John Sloan, lead research analyst at Info-Tech Research Group. “The shiny paper with cloud computing is that it promises to provide rapid deployment and lowered capital costs for entry. That’s really the sell for the cloud. The thing is that once you start using it, incremental costs continue to add up, especially if you’re using an external cloud for an application that’s 24/7 and ongoing over time. Those costs continue to accumulate.”

SIX QUICK TIPS

Improve Enterprise Security

New Security Techniques Can Help Keep You Ahead Of Emerging Threats

SECURITY IS EVER-CHANGING, ever-evolving. Everybody wants to utilize the newest solutions and applications, but if you don't have security measures in place to protect them, you could be opening your company to attacks that will hurt your reputation or, worse, result in the loss of customers. That's why it's important to put security systems in place that will protect your company's future.

✓ *Read Up
On The Newest Threats*

When trying to improve your company's security, the first step is to make sure you are up to date on the newest threats and understand the types of attacks. For instance, Jessica Ireland, research analyst at Info-Tech Research Group, says that some insider

threats are "not necessarily always a case of a disgruntled employee seeking revenge," but rather a result of human error, such as forgetting to encrypt a document or "writing important passwords on Post-It notes."

Mobile devices are big targets for attackers because employees want to bring in their own devices or access sensitive company information while away from the office. "These devices are essentially the threats, even if they're not used for malicious purposes," Ireland says. "If an organization does not have an appropriate use policy and tools like remote wipe in place, nor do they know what to do around data, that's when they open themselves up to threats."

Social networking is another emerging area for attacks, with employees unknowingly

leaking information via Facebook or Twitter. Also, Ireland says, some hackers use virus-infected URLs masquerading as short URLs such as bit.ly for the injection of malicious code through instant messaging and social sharing. Combine these risks with the fact that companies have to deal with direct attacks to their networks and other infrastructure on a regular basis, and it's easy to see why better security measures are absolute necessities.

✓ *Look At Investing In
Next-Generation Firewalls*

A next-generation firewall or unified threat management (UTM) solution can help protect your company against some of the newer threats. James McCloskey, senior research analyst at Info-Tech Research

Group, says these firewalls are particularly appealing because they bring together functions from multiple non-integrated deployments in an organization. Where you would originally have to configure and manage each individual system, you can now implement one unified solution.

Another major benefit of UTM is that you can scale it over time. McCloskey says a UTM deployment will give you much smaller management and acquisition costs as compared to buying all the products separately and a much easier path to adding functionality, because it's done through licensing. For example, you can start with a base configuration but later add data leak prevention, a Web content filtering system, or other functionality through licenses



rather than implementing brand new systems. “It’s a very effective approach to being able to incrementally increase your capabilities and reduce your costs without having to do a rip and replace,” McCloskey says.

✓ *Consider A Security Incident & Event Management System*

Firewalls are a good first defense in security, but there are other more advanced systems that companies may want to research and consider implementing. One such solution is a security incident and event management, or SIEM, system that goes beyond typical log management solutions to not only aggregate and normalize log management but also correlate it. “The correlation is really where the real benefit comes

for organizations with SIEM,” McCloskey says. “That’s the idea that log entries from different elements of your environment may be related to the same underlying incident.”


McCloskey points to an example of a “low and slow hacker attack” being perpetrated on a network. He says that in some situations an attack may be in progress, but your intrusion detection system will only recognize it as traffic rather than trip an alarm. With an SIEM solution, you might be able to correlate that event to some activity on another server, such as people using locked-out user accounts or a hacker entering failed password attempts. The SIEM system would make the correlation between two different log sources and notify the proper employee or team that an attack is taking place.

“The correlation capability can really advance an organization’s ability to either block attacks as they are just starting or respond much more effectively to stop them and deal with any of the incident management as a result of it.”

✓ *Be Proactive*

The key to great security is to always be in front of threats. Ireland says that companies should stop being reactive and waiting until something terrible happens to respond. New technologies are emerging every day, she says, bringing new threats and vulnerabilities, but it’s up to the company to be “flexible enough to acknowledge these trends and prepare for them in their own organization.” Regularly research emerging technologies that

may have a place in your workplace and proactively develop security measures to counteract the inherent risks.

McCloskey adds that companies may end up paying a lot more money to fix problems after the fact than if they had prevented them ahead of time. “Organizations that look at embedding security practices into their regular IT operations will find themselves much more secure and much more operationally efficient than companies that deal with security reactively,” McCloskey says. “It’s estimated that fixing a security problem with an application after it has been released is nine to 10 times more expensive than building something in advance. You won’t prevent every incident, but you’re going to minimize the frequency and impact of the incident.” 

✓ *Be Aware Of Your Risk Tolerance*

Jessica Ireland, research analyst at Info-Tech Research Group, says that not every enterprise will be able to keep up with everything that happens in the company, but she also points out that they “need to do the best they can with what they have.” One way to do that is by being aware of your company’s limits and its risk tolerance.

“Being aware of their risk tolerance can inform their strategy to protect them against as much as possible,” Ireland says. “Low risk tolerance organizations like a hospital will need to get a lot of technology in place to adequately defend themselves against the threats they may face. If you are a relatively high-risk organization, you obviously have less to worry about and may only need to implement basic security tools.”

✓ *Look Into Mobile Device Management*

Instances of bring your own device are rising in enterprises of all sizes. It’s important to not only develop policies that tell employees how and when they can use their devices, but to also put systems in place that give the company more control over outside devices. “BYOD has opened the door to mobile device management solutions,” says James McCloskey, senior research analyst at Info-Tech Research Group. “They give you an opportunity to extend the productivity and user experience benefits of allowing employees to use whatever devices they want to use. But at the same time, they mitigate or manage the risk for the organization of what can be put on those devices and how it’s protected on those devices. And in the event of loss or theft, the organization has some mechanism to wipe that data off.”

BONUS TIPS:

✓ *Know What’s Happening*

It may seem like common sense, but if you want to improve the overall security of your network, you need to be able to see what’s happening on your network so you can efficiently respond to it. “One of the biggest security concerns isn’t necessarily a virus or malware; it’s lack of visibility into the organization,” says Jessica Ireland, research analyst at Info-Tech Research Group. “Organizations need to proactively monitor the activity within their networks. Besides the fact that internal attacks are more likely to occur, it also makes you aware of potential outsider attacks.”

✓ *Try A Three-Pronged Approach*

James McCloskey, senior research analyst at Info-Tech Research Group, says the most effective security comes from using three elements. “Policy is important because it gives the company the right to do certain things if people aren’t meeting expectations, the technology is important to be able to enforce that policy, and then the communication to the user is important so that they understand the policy and abide by it. Those three together are going to be the key to enhancing the overall security posture of the organization.”

BUYING TIPS:

Data Center Furniture



FURNITURE IS THE REAL BACKBONE of your data center. That’s why purchasing furniture that matches your needs is essential. Here’s what to keep in mind.

✓ *Know Your Company*

The furniture you choose depends on the services your company provides. “Some companies need conference room furniture for secure and private consultations, and others, such as network centers, might utilize server cabinets or colocation cabinets and racks,” says Susan Wynne, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net)

✓ *Research Available Vendors*

A solid data center furniture vendor will have a long track record of providing high-quality products and services. That ensures you can view it as a partner and work with the company for years to come. “You want a vendor that you can invest in for the future,” says Eli Hertz, CEO and president of Hergo (888/222-7270; www.hergo.com). “You don’t want to deal with a company that will only be around for a one-time purchase.”

Also, be sure to research all of your available options. “Look for a reputable company with knowledgeable sales staff and one with short lead times,” Wynne says. She also recommends spending more money upfront on quality products from a long-standing vendor. “The initial investment may be more

than you wanted to spend, [but] the furniture will stand the test of time.”

✓ *Check For Quality*

Once your budget is established, you can get the best value for the dollars you spend by looking for the best materials for your price range. For example, the frame makes a big difference in a piece of furniture’s durability. Especially for desks, a steel frame with cross supports is going to be the most durable model. As for surfaces, high-density laminate and high-density pressboard are good choices.

✓ *Make Sure It Fits The Space*

Before buying furniture, do some planning first, Wynne says. “Know the function of the room. Have in mind a design or layout of the space you’re wanting to create. A sketch or draft of the room with the various components in place is helpful,” she says.

Know the dimensions of the space and furniture to ensure you meet requirements. Also helpful is knowing how a workstation will be used and by how many people to ensure overall comfort. Be sure to note whether the surface of the furniture has a lip of some kind that makes it wider at the top than at the bottom, and don’t forget to leave space for drawers to pull out in cabinets or for people to work in front of the furniture.

Marking the space with tape can show you how much space the furniture takes up as well as what kind of walking space will be

left over once it’s there. If you prefer not to do it yourself, many furniture vendors offer design templates or free space planning.

✓ *Use Your Space Efficiently*

You can save money without sacrificing quality by making sure you are using space efficiently. One way to do this is to go vertical rather than horizontal, possibly by investing in pieces of furniture that are wall-mountable. “Office and lab space is at a premium,” says Kristen Speranza-Diamond, vice president at Hergo. “It’s beneficial to go vertical and make the best use of square footage.”

Speranza-Diamond says that most necessary pieces of furniture and equipment for data centers are becoming less expensive, “so everyone is upgrading and making the transition to go compact.” Manufacturers are putting more advanced technology into smaller packages, which will help you put more equipment into each piece of furniture.

✓ *Focus On The Future*

Be sure to look for key features, such as height-adjustment for chairs or cable management systems for racks. If you invest in modular furniture with swappable pieces, you’ll have room for future growth, Wynne says.

Choose furniture that will have a long lifespan. “You have to know that your current furniture will still be available in six or 12 months should you wish to duplicate or expand,” Wynne says.

KEY TERMS

adjustable height

Refers to components users can raise or lower for a better individual fit. Some higher-end furniture can be adjusted electronically.

cable management

Built-in grommets, channels, or other features to manage cables and wiring.

modular

Furniture components that are interchangeable or can be easily modified.

BUYERS’ CHECKLIST

- ✓ **Seek out quality.** Although looking for deals can help companies on a tight budget, sacrificing quality as a result can end up costing companies more in the long term, especially if buying from vendors that don’t offer lifetime warranties on furniture.
- ✓ **Know the delivery terms.** Determine if the delivery includes bringing it inside the facility, requires a lift gate or loading dock, and includes assembly or puts the responsibility on you or a third-party installer.
- ✓ **Go modular when possible.** Buying components that are interchangeable lets you modify the setup to meet changing needs, including downsizing or expanding space. Increasingly, individual furniture units can be mixed and matched and layout configurations easily altered.
- ✓ **Build vertically.** Purchase components that support building vertically for better space efficiency.

BUYING TIPS:

Cable & Airflow Management



MANAGING CABLES is an afterthought. That’s an unfortunate reality among many data centers, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). Among other things, poor cable management leads to performance problems and issues with troubleshooting and airflow.

✓ **Know Your Environment**

Analyzing your environment is the first step to better cable and airflow management, says Roger Jette, founder of Snake Tray (800/308-6788; www.snaketray.com). “It’s not that hard to walk around with a streamer or accurate thermometer to get a feel for where air is coming from and going to,” he says.

Jette says someone who best knows the facility should work to find out where the facility is the coldest, where it is the hottest, and what’s preventing air from getting from one place to another. Once that’s done, you might be able to solve big problems on your own through the use of air dams, grommets, and cable pathways.

Your goal, Jette says, is to “take preventative measures either architecturally or through product to prevent air from the cold aisle from escaping to the hot aisle without passing through a piece of equipment that’s generating heat.”

✓ **Know What’s Available**

When it comes to available product, Brett Femrite, sales manager at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says well-designed patch cable storage managers, which house and cover patch cords between patch panels and devices, are popular. Other cable management options include horizontal and vertical wire managers, vertical and horizontal lacer bars, cable ladders, a large assortment of cable trays and conduits, and various wire minders (rings) that can be mounted on any rack system.

Carrie Higbie, global director of data center solutions and services at Siemon (860/945-4200; www.siemon.com), says larger and wider cabinets can allow for vertical patching or even just more room for power and communications cabling. Baffles for side discharge equipment are an important part of managing airflow.

✓ **Plan For Expansion**

Laura Viars, senior sourcing specialist at Rackmount Solutions, says to be sure your cable management configuration allows for future equipment additions. Make certain managers (both in-rack cable managers and external trays and ladders or conduits)

don’t meet or exceed their fill capacities. Most management options are available in multiple sizes, she says.


Also seek solutions with the flexibility to add new equipment or troubleshoot an existing component. “Lean toward reusable options such as Velcro straps in lieu of cable ties and managers that allow easy access to their contents,” she says.

✓ **Avoid The Swing Arm**

Server-mounted swing arms are a common solution for cable management, Higbie says, but they actually cause problems with airflow and cooling. “Swing arms route cable horizontally across the equipment, blocking exhaust fans and spaces critical to proper hot aisle/cold aisle airflow,” she says.

You can eliminate server swing-arm doors by routing cords and cable directly into zero-U vertical patch panels or cable management channels, Higbie says, which dramatically reduce the airflow disruption in the horizontal cabinet space seen in traditional cabinets with swing-arm doors.

✓ **Consider Color & Labeling**

Koty recommends using color coding. With data cables, use color to identify role/function or connection type. With power cables, use color to identify and organize dual-power feeds for redundant power sources. Secure labels so they’re accessible but difficult to remove. Use a spreadsheet to track the cables and colors, where cables come from and go, and configurations. 

BUYERS’ CHECKLIST

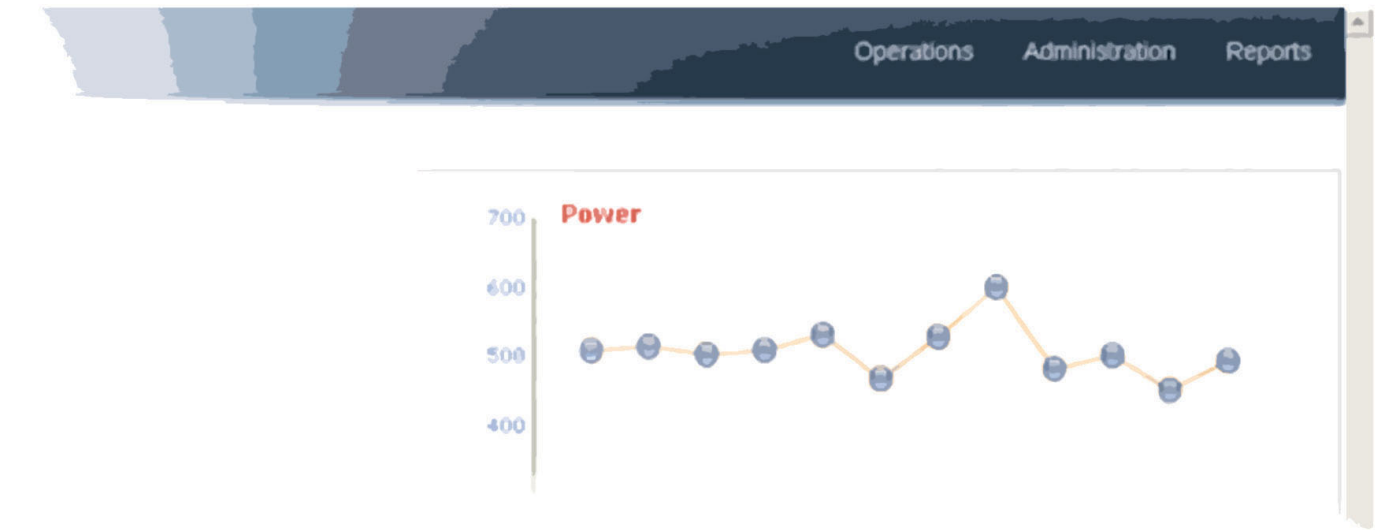
- ✓ **Make sure you have room.** Mark Weinegger, vice president of sales at CE Communication (866/966-1555; www.cecommunication.com), says to make sure you have enough room in your rack elevation layout to support the cable management devices purchased. Zero-U devices take up virtually no space in the rack while still allowing easy identification of the cable coming off a switch.
- ✓ **The basics.** Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says no matter the size of installation planned, you’ll likely need basic management items such as vertical managers to bundle cable along the height of the racks/cabinets; horizontal managers to bring the cabling neatly from the drop to the equipment; and Velcro straps to bundle cables as needed.
- ✓ **Testing.** Pre-test all cable before installing, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). Once installed, it’s more difficult to test and identify problems.

KEY TERMS

- cable bend radius**
The minimum radius a cable can acceptably bend and still function as intended.
- TIA/EIA**
The TIA (Telecommunications Industry Association) and EIA (Electronic Industries Alliance) provide best practice guidelines regarding cabling infrastructure.

BUYING TIPS:

DCIM
Solutions



DATA CENTER MANAGERS are eyeing DCIM (data center infrastructure management) solutions for the numerous benefits they can offer by providing a holistic view of data center and facilities infrastructures. Here are some of the key elements to consider when purchasing a solution.

✓ *Know What DCIM Can Do For Your Data Center*

DCIM solutions enable IT to view real-time power and temperature usage data on a granular level and provide monitoring, management, automation, optimization, and capacity and budget planning capabilities, all of which lead to the streamlining of operations and improving energy consumption and overall efficiency. Along with that real-time, holistic view into power, cooling, and other IT and physical assets, you'll get documentation, control, visibility, and metrics tools all in one solution.

DCIM solutions can replace spreadsheets, paper records, CAD drawings, and similar tools traditionally used to track assets. You'll gain real-time, in-depth views into physical and IT assets because, with DCIM, you'll have a firm understanding of where your infrastructure assets exist and where spare capacity exists.

Other benefits include quick completion of company-required changes; the ability to receive complete capacity data for power, rack units, cooling, chassis, and network capacity consolidated into one system; less downtime; and precise views of capacity, trend, and environmental data for everyone to access.

✓ *Find The Right Product To Meet Your Needs*

When comparing DCIM solutions, be sure to consider what your greatest need is and your ability to fully use the platform's tools. For example, determine whether you have the resources in place to address issues the DCIM solution uncovers and change the facility or operating procedures to enable improvements.

The maturing of the DCIM market means there are products suitable for even small enterprises. When evaluating vendors, look for ones that have forged strong links with the leading enterprise IT management vendors. In some


cases, your existing power vendors may offer solutions. This would be a good starting point as you already trust them as vendors.

Don't forget that, with whatever DCIM application you choose, you need to have the infrastructure support to run and maintain the application, says Alex North, director of business development at BayTech (800/523-2702; www.baytech.net).

✓ *Seek An Easy Migration*

Rather than re-creating the wheel, seek out a DCIM solution that supports easily migrating existing data to the new system, says Brett Femrite, director of business development at Rackmount

Solutions (866/207-6631; www.rackmountsolutions.net). For example, if you're maintaining multiple spreadsheets, CAD drawings, and other diagrams, he says, "migrating that information into the DCIM solution easily will be a lifesaver."

The solution should allow data center managers to start small and work up to added levels of sophistication in phases, he says. "Flexibility can breed complexity, and while a full-featured DCIM solution can seem complicated, getting started doesn't have to be." A modular solution that enables initially buying what's needed and layering in additional features gradually is a nice benefit. 

BUYERS' CHECKLIST

- ✓ **Plan for the future.** A DCIM solution should support capacity and optimization planning, offering tools that help "determine future requirements for power, cooling, floor space, rack space, and contingency planning," says Brett Femrite, director of business development at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net).
- ✓ **Know what you're up against.** Possible obstacles to acquiring a DCIM solution can include the company's finance department vetoing the purchase; departments having different solutions in mind, leading to paralysis; vendors not providing a solution priced for the small to mid-sized enterprise; lack of manpower needed to learn, implement, and oversee the solution; and poor or slow solution support. Before investing in DCIM, know how you'll handle these obstacles.

KEY TERMS

Corporate Average Data center Efficiency (CADE) and Power to Performance Effectiveness (PPE)

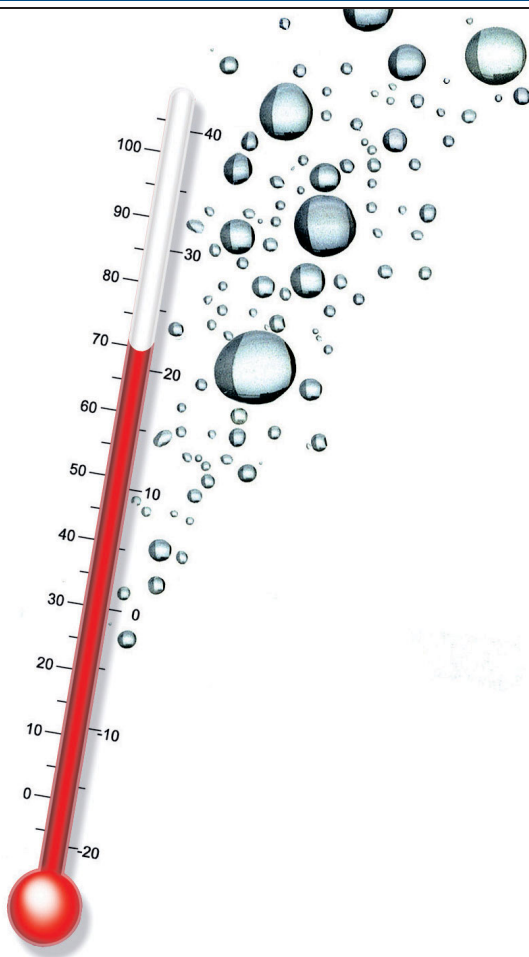
Two rating systems, created by McKinsey and Gartner, that go beyond power usage effectiveness (PUE) and account for IT energy efficiency. Both systems are designed to help IT managers address low server utilization, which is the biggest source of waste in data centers today.

point solutions

Many DCIM vendors offer only one or two DCIM components, or points, rather than an entire suite of DCIM tools.

BUYING TIPS:

Environmental Monitoring Equipment



ENVIRONMENTAL MONITORING offerings are not things an enterprise invests in on a whim. Every organization has unique infrastructure limitations, climate issues, and monitoring needs, so there’s no one-size-fits-all solution. Here’s what to look for.

✔ *Define Your Needs & Threats*

Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says you need to know what types of threats might occur. “The most common environmental risk is excessive heat within the cabinets, so you’ll definitely want to make sure you are monitoring temperature,” she says. Other potential environmental dangers include power surges/loss of power, humidity, smoke, airflow, and room/cabinet entry.

“Know thy facility,” says Michael Sigourney, senior product specialist at AVTECH (888/220-6700; www.avtech.com). “The first thing an IT or facilities manager needs to consider and create is an understanding of the basic layout and elements, both structure and equipment, within their facility. Knowing where threats are likely to occur or have occurred in the past is key to planning success.”

Water and leak detection can be easy to neglect. Chris Pullen, president of RLE Technologies (800/518-1519; www.rletech.com), says that, while power failure is the No. 1 cause of downtime, water is the second and can often be the overall cause of a power failure. He says you need to install leak detection throughout your facility. “Don’t forget to look above the ceiling. What’s on the floors above your data center? Look outside the box.”

✔ *Understand The Options*

With so many choices, it’s tough to know where to start. Harry Schechter, founder and CEO of Temperature@lert (866/524-3540; www.temperaturealert.com), says ease of use and reliability are the two most important features to look for. “Choose a product that provides just the features you need, and this will ensure you’re getting something that will be intuitive to set up,” he says.

When it comes to connecting monitoring equipment to the network so that it can send alerts, several options exist, Schechter says. USB, Wi-Fi, and Ethernet remain popular, but there are also newer infrastructure-independent devices based on cellular phone connections.

✔ *Install & Monitor*

An environmental monitoring system is nothing without notifications. “The primary motivation for adding an environmental monitoring

system is to know when you have a problem as soon as possible,” says Bob Douglass, vice president of sales and marketing at Sensaphone (877/373-2700; www.sensaphone.com). Common notification options include email, LEDs, audible alarms, beacons, sirens, Web alerts, SNMP, automated phone calls, and SMS.

To avoid false alarms, let the monitor run for a few hours after installation so you can see the natural cycle of temperature and other sensors, Schechter says. Once you have a chance to review what a “normal” reading looks like, you can set an appropriate high/low threshold.

✔ *Ensure Ample Coverage*

Consider the room size and amount of equipment to be monitored and plan the number and placement of sensors accordingly. “If your deployment is small, a few points of measurement may suffice, but if you have a large operation, you may require environmental measurements every few feet,” says Brandon Siri, senior marketing representative

at Server Technology (800/835-1515; www.servertech.com).

✔ *Get All You Need*

Be sure you get all the components to complete the system, Viars says. “Most systems have a main console, and in addition to that, you’ll need to purchase various sensors based on what you are looking to monitor specifically.” Some sensors might require a power source, so consider that when planning your layout.

Sigourney adds that the best solutions include software. “This prevents wasted time trying to get hardware and software from two vendors working together.”

✔ *Consider Long-Term Support*

Choosing the right solution means little if you don’t have long-term support, Sigourney says. “Look beyond the checklist and make sure that you’re getting future enhancements, that you have access to support, and that the company stands behind its products.”

BUYERS’ CHECKLIST

Gina Dickson, director of infrastructure products at Black Box (877/877-2269; www.blackbox.com) offers this list of important features to look for:

- ✔ What conditions can be monitored (temperature, humidity, power, etc.)?
- ✔ Are the sensors wireless or wired? How they will be installed?
- ✔ What kind of reporting is available from the system? Can data be stored and exported for trending and analysis?
- ✔ What types of alerts and notifications can the system produce?
- ✔ How easy is it to configure and operate the system?

KEY TERMS

dry contact

Refers to an electrical contact that has no internally available voltage.

gateway

Receives information from sensors and can provide alarm/alerting functions.

sensors

The wired or wireless devices that measure and report environmental conditions to the gateway.

BUYING TIPS:

Security



WITH SO MANY SECURITY solutions on the market, it can be difficult to choose the right ones. Here is some advice on what every enterprise needs.

✓ Start With Network Access Control

A network access control solution will limit unnecessary access to your company’s internal resources. If you can prevent outsiders from connecting to your network, then there is a much smaller chance of a security breach. Network access control systems can also be used to monitor the mobile device connections of employees working outside the company. Smartphones and tablets are becoming popular targets for hackers, so checking to make sure the external connection is safe and secure will go a long way toward preventing a potential intrusion.

✓ Move Up To Unified Threat Management

A UTM solution goes a bit beyond network access control by essentially creating a gateway through which all users and data have to pass before landing on your company’s internal infrastructure. UTM combines intrusion prevention, antivirus, antispam, and many other features into one solution designed to protect your company.

✓ Don’t Forget Email Security

Receiving malware-filled messages can result in the infection of one computer or the infrastructure of the entire company. And sending messages with sensitive information no matter what the reason is always a dangerous proposition. As one of the most basic measures, every company should have some form of encryption attached to its email systems. Encryption helps ensure that even if an email is intercepted, it is less likely that a hacker will be able to mine anything from it.

Along with encryption, you’ll want to invest in an antivirus program to protect servers and endpoints against malicious code and viruses. Make sure the program you purchase automatically downloads and deploys signature files all the way to the endpoints.

✓ Add In Data Loss Protection

An enterprise data loss prevention (DLP) solution can “offer a lot of capability in terms of preventing the egress of data,” says James Quin, lead analyst at Info-Tech Research Group. Such solutions can be expensive, so finding existing tools with DLP capabilities (up-to-date network perimeter UTMs and comprehensive endpoint anti-malware packages) can “deliver

at least a moderate level of protection without the excessive cost,” he says.

✓ Check For Updates & Upgrades

Making certain basic security tools are in place is half the battle. The other half is ensuring antivirus systems, hardware, and anything else tied to security are continually patched and updated.

Dan Olds, founder of Gabriel Consulting Group, says IT should take a “maniacal” approach toward patching software and firmware. “Unpatched and unmaintained systems are the biggest cause of security vulnerabilities,” he says. “The biggest trouble areas are

systems on the network that haven’t been maintained and patched to the appropriate levels. There are a wide range of devices that tend to fly under the radar, including servers, desktops/laptops, and networking components. If something is on the network and can see the outside world, it can end up being a vulnerable point that can be exploited.”

One possibility, Olds says, is using a network discovery tool that tracks down everything on the network and creates an inventory of items that need to be checked and that need the latest patches. “This is a good project for a new hire or intern—provided they’re supervised,” he says.

BUYERS’ CHECKLIST

- ✓ Does the solution allow you to limit access to the network and block unwanted connections?
- ✓ Can the solution provide a perimeter defense that prevents threats from landing on your servers and other internal equipment?
- ✓ Email makes it easy to infect computers with viruses and send out sensitive data to hackers, so you should invest in a strong email encryption solution.
- ✓ Will the vendor help you set up an update and upgrade plan that will let you keep your security solutions up to date without breaking your budget?

KEY TERMS

mail transfer agent (MTA)

A solution that catches and checks incoming email for threats before transferring it to your internal email platform.

network access control

A solution that helps you limit access to your network and lower the chance of an infiltration.

unified threat management (UTM)

Software (often installed on a managed appliance) that seeks to comprehensively block malware and network threats through features such as a firewall, antivirus, antispam, intrusion prevention, VPN, access policy enforcement, and more.

BUYING TIPS:

Storage



YOU SPEND A LOT OF MONEY on storage, and you need to make sure every dollar you spend is a good investment. With so many options available, including cloud, in-house, or some combination of both, it’s more important than ever to have a solid understanding of what’s available and what’s most important for your enterprise.

✓ *Do Your Homework & Know Your Goals*

When narrowing your storage options, careful research is invaluable. “Do your homework, but don’t over-analyze,” says George Crump, senior analyst at Storage Switzerland. Crump suggests discussing your project with one systems vendor, one new-but-established vendor focused on the mid-range, and one startup.

Crump says you should have a clear goal. “Do [you] need more capacity, more performance, better data protection, [or] some or all of the above?,” he asks. Be clear about your company’s business requirements, business strategy, and networking strategy, including bandwidth requirements and available facilities and services.

Greg Schulz, senior advisor at Server and StorageIO Group, recommends stepping back from comparing tools and technologies initially and instead reviewing service-level objectives and requirements, including RTO and RPO. Also be sure to give serious thought to how much of the new storage could be in the cloud, whether public (third-party) or private (in-house).

✓ *Inventory Your Data*

Have a clear understanding of your data and requirements. Inventory the type of data you have today—how much is in databases, email, files, and other formats. Crump says a good set of storage analysis tools can help you evaluate how you’re currently using your IT resources.

✓ *Spend What’s Needed*

Storage can be expensive, but you get what you pay for. “While everyone wants to spend pennies to save dollars, real data protection may cost dimes, not pennies—but you’ll still be saving dollars,” says Jason Buffington, senior analyst with Enterprise Strategy Group.

Often, management may underestimate the financial impact downtime or lost data has until it’s too late, he says. “In today’s market, that may mean losing a key client or potentially being unable keep the doors open just because you can’t get your data back,” he says.

✓ *Consider Outsourcing Storage Management*

Mike Karp, vice president and principal analyst at Ptak, Noel, and Associates, says for small to mid-sized enterprises, most often the best option is outsourcing storage management, particularly where getting the most out of your storage and doing it with the greatest efficiency is concerned.

“Third-party providers often have a huge competitive advantage when it comes to providing storage services, and if an IT manager can make a good business case for outsourcing many of the storage responsibilities . . . they can spend more time doing the things that they do best and offload the things that they can’t do with greater efficiency to somebody who can do them in a cost-effective manner.”

BUYERS’ CHECKLIST

Here are some things to keep in mind as you formulate your storage strategy:

- ✓ **Data safety.** Keeping your precious data safe is vital to profitability, so be sure to implement redundancy and strong error correction, as applicable.
- ✓ **Uptime.** You need reliable devices and software, along with failover protection (both emergency power and redundant data storage systems). You’ll also need support from the vendors, relevant manufacturers, and/or developers.
- ✓ **Security.** Consider all elements, including user access policy, encryption, firewalling, and malware prevention.
- ✓ **Speed.** How fast your storage works is important. SSDs will have a role in most data centers.
- ✓ **Manageability.** Your organization may require new software for storage management, data protection, support, and future storage planning.
- ✓ **Cost-effectiveness.** Think not only in terms of cost per gigabyte, but also cost per IOPS. Deduplication, virtualization, and provisioning features can help you avoid wasting money and power on unnecessary drives.
- ✓ **Scalability.** Whichever path you take, make sure the result will let your data center grow with your organization’s needs.

KEY TERMS

cloud storage

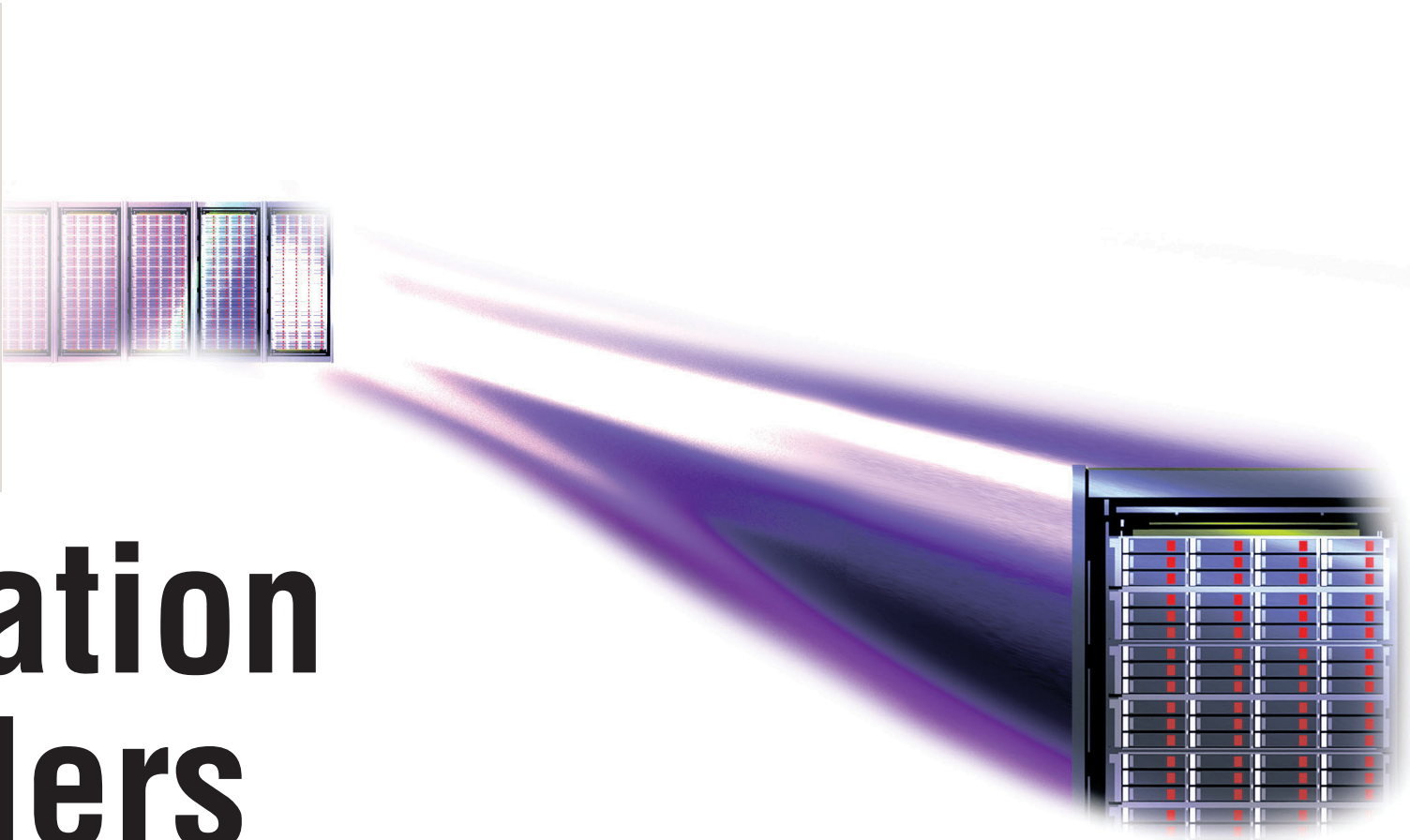
Storage that takes advantage of offsite, third-party providers that maintain and manage the physical storage devices.

solid-state drive (SSD)

Data storage with no moving parts; it uses solid-state memory, or microchips, to store data, making data retrieval faster.

BUYING TIPS:

Colocation Providers



GETTING IT RIGHT THE FIRST TIME is crucial when selecting a colocation provider, says Darin Stahl, Info-Tech Research Group lead analyst. “When you get into a colocation, switching costs are enormous,” he says. “This isn’t like buying a bunch of photocopiers, being unhappy with them, and putting them to the curb and getting new [copiers] in. It’s a big deal to go through switching.” To find a good fit with a colocation provider, consider the following.

✓ *Understand The Options*

Stahl says the colocation/managed service providers market can be categorized into three tiers. Tier one vendors typically have significant market influence and enormous geographic scale, he says. Tier two vendors generally have the same qualifications but less market influence and possibly less geographic scale. Tier three vendors are basically everyone else, he says.

Although price is a factor when comparing providers, it shouldn’t be the driving factor. Smaller colocation providers that compete on price and don’t own their facility typically can’t offer an iron-clad SLA around the actual facility, Stahl says.

Lynda Stadtmueller, program director for cloud computing services at Frost & Sullivan’s Stratecast division, agrees, adding, “There’s too much at stake . . . to go low bid.” Colocation, she says, “is not a commodity; every provider has different configurations, capacity, processes, and systems that can seriously impact your applications.”

✓ *Consider Usage & Location*

Be sure to consider how you want to use the facility and for what purpose. Some companies invest in colocation so they can cut down on internal data center and infrastructure costs while others hope to set up a safe solution for disaster recovery. Once you know how you intend to use equipment in your colocation environment, you can then find the best location.

✓ *Make Sure There Is Room For Growth & Expansion*

Although it’s important to put a heavy focus on what your company needs now in terms of equipment and performance, it’s also crucial to look to your company’s potential future needs and ensure there is enough room for expansion years down the road. Instead of backing yourself into a corner, make sure your colocation provider’s facility is flexible enough to support more or less equipment depending on

whether you wish to expand or consolidate at a later date.

✓ *Know The Reputation Of Your Provider & Its Facility*

Checking a colocation provider’s past history is as important as making sure it’s in a safe location, if not more so. Request customer referrals whenever possible and gather as much information as you can about the provider before you make your decision.

✓ *Check The SLA*

“Be sure to compare the SLA to the services you are planning to use,” advises Brett Femrite, sales manager at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net). “Some SLAs have varying

levels of coverage based on the services that you choose. Be sure to note whether there is a redundant service offering that you must opt in to use in order to be fully covered by the SLA. Examples include A/B power or redundant network connections.”

Stahl says to push for the contract to include an annual services review and ability to right-size or contract services so you don’t pay for, say, server space you don’t need. Some of the best vendors do this upfront, he says, while others will with a push and some not at all. Conduct a quarterly operations-style meeting with the vendor to discuss what you did in the space during that time, what worked and didn’t, and what you have planned. Ask the vendor to do likewise, which may result in learning the vendor’s scheduled outages. **P**

BUYERS’ CHECKLIST

- ✓ Who owns the colocation facility?
- ✓ What are your short- and long-term plans for the facility?
- ✓ What options are in place for potential company growth and expansion?
- ✓ How much power and space do you need?
- ✓ Does the facility offer 24/7/365 customer service?

KEY TERMS

cabinets, cages, and suites

Terms used to describe how much space a company needs for its colocation resources. Cabinets are for companies that only need a small amount of space; suites, vaults, or rooms are required for larger-scale colocation needs.

geographic risk mitigation

The practice of selecting a colocation provider and facility based on the location of its data center. For instance, choosing a data center located in a region with a calmer climate vs. one located in a region that’s prone to hurricanes, earthquakes, or other natural disasters.

BUYING TIPS:

Used Equipment

WHEN YOU’RE IN THE MARKET for used equipment, knowing what to look for and whom to buy from can be challenging. Here are some tips to help.

✓ *Understand The Testing Process*

When a vendor purchases used equipment for resale, a visual inspection and diagnostics test are usually the first steps in the testing process. Technicians ensure that components are complete, that they’re operating at the original specifications, and that everything is current and in proper working order. But successfully getting through the diagnostics phase doesn’t mean that a piece of equipment is home free. Other factors can still move items from the refurbish line to the recycle heap. Used and refurbished equipment dealers look for problems such as cosmetic repairs that require too much time to fix or signs of pending equipment failure or tampering.

As a buyer, where applicable, you’ll want to be sure the equipment you’re buying has been tested and updated with any

new BIOS or firmware levels. And whether you’re buying equipment from someone else or selling your own, make sure the data has been wiped clean to avoid security breaches and data loss.

✓ *Spot The Signs Of Possible Counterfeit Equipment*

Hardware is at risk for counterfeiting, especially equipment with recognizable, higher-margin brand names. Counterfeiters don’t mind investing more money into making good fakes, and, unfortunately, it’s not always easy to spot these fakes. If equipment is in its original packaging, pay attention to the quality. As always, know who you’re dealing with and research the reputation of the company you’re buying from, then be sure you know the recourses available should you discover something is counterfeit.

✓ *Pay Attention To Part Numbers*

Savvy buyers of used and refurbished equipment check part numbers ahead of

time, because you don’t want to receive equipment that’s close to—but not exactly—what you thought you were getting. Check to make sure that components carry only original part numbers, so you know exactly what you’re buying.

✓ *Know The Warranty & Return Policies*

Knowing how a supplier handles equipment returns is an important factor in any purchase decision. Warranties are only as good as the company offering them, so do your homework. Reputable companies provide faster turnaround on advance replacement exchanges, they may waive restocking fees, and they offer better support options.


Also, find out if you’ll need to hold on to the original packing material until your warranty period expires. Some suppliers won’t accept returns unless they’re in the original packaging, while others are less picky. Customers should ask about the requirements when making their purchase so that a return isn’t refused because

someone inadvertently pitched the original box.

Even if a supplier accepts your returned equipment, you might not get your money back and instead will get a return for credit. If your equipment purchases are infrequent, your money could be tied up until you find something else you need to buy.

✓ *Ask Your Vendor For A Trial Period*

Inspecting equipment before you buy it can be difficult, but you may be able to swing a brief trial period. Be sure to test and inspect the components and contact the vendor if you find any defects.

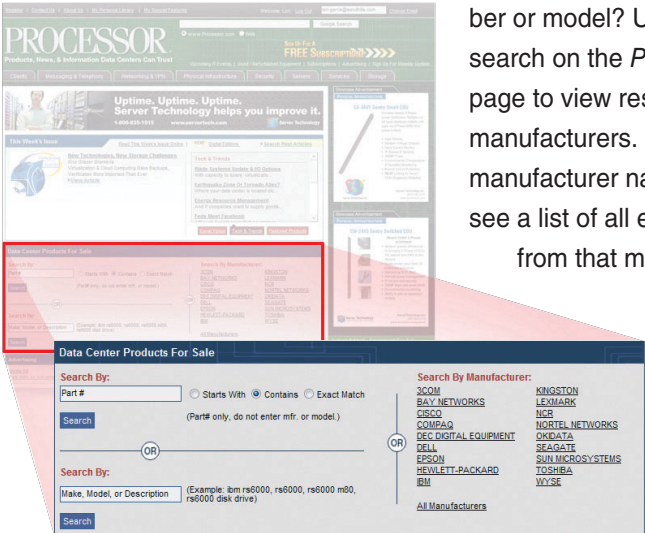
The payment method you choose could also offer safeguards, such as the dispute resolution available through most credit card companies. Depending on your company’s buying position and relationship with the vendor, you may also be able to get a sample piece of equipment. This is often a good route for data centers looking for multiple identical components or considering a shift to a new manufacturer or platform. 

USE PROCESSOR.COM TO FIND DATA CENTER EQUIPMENT

Looking for help pinpointing the products you need, from vendors you can trust? Finding the equipment you need is easy with *Processor’s* online Data Center Products For Sale database.

From *Processor’s* home page (www.processor.com), you can search for a specific part number, make, model, or description. Enter the information in the appropriate box and click Search. You’ll see a list of available equipment. If you don’t see the particular piece you’re looking for, scroll to the bottom of the search results page to conduct a more detailed search. There, you can search by part number, model, price, location, and more.

Don’t know the specific part number or model? Use the drill-down search on the *Processor* home page to view results from specific manufacturers. Simply click the manufacturer name, and you’ll see a list of all equipment listings from that manufacturer.

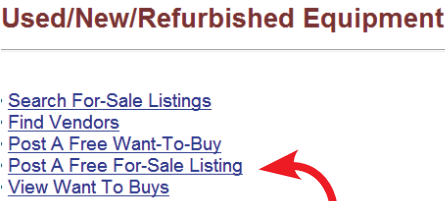


Do you have excess equipment?
Post it for sale on Processor.com!

On the Processor.com home page,
click Used/Refurbished Equipment.



Choose
Post A Free
For-Sale Listing.



Follow the on-screen directions from there!

Network With Your Peers

At These IT Training & Association Meetings

Across The United States

MAY

Interop Las Vegas

May 6-10
Las Vegas, Nev.
www.interop.com

Troubleshooting & Maintaining
Cisco IP Networks

May 6
New Horizons Lexington
1050 Chinoe Road, Suite 208
Lexington, Ky.
www.nhlexington.com

See & Do: Build Virtual Machines
In The Cloud With Windows Azure

May 7
New Horizons Tulsa
6550 E. 71 St.
Tulsa, Okla.
tinyurl.com/NHTulsa050713

AITP Wheeling

May 8
White Palace at Wheeling Park
1801 National Road
Wheeling, W.Va.
www.aitp-wheeling.org

AFCOM Potomac

May 9
Washington Dulles Airport Marriott
45020 Aviation Drive
Dulles, Va.
www.afcom.com

AITP Washington, D.C.

May 9
Alfio's La Trattorio Restaurant
4515 Willard Ave.
Chevy Chase, Md.
www.aitpdc.org

See & Do:
Build Virtual Machines
In The Cloud With Windows Azure

May 9
New Horizons Oklahoma City
3010 N.W. 149th St.
Oklahoma City, Okla.
tinyurl.com/NHOKC050913

CompTIA
Project + Certification

May 13
New Horizons Nashville
227 French Landing Drive, Suite 400
Nashville, Tenn.
www.nhnashville.com

AITP
Richmond

May 14
Hilton Garden Inn at Innsbrook
4050 Cox Road
Glen Allen, Va.
www.aitprich.org

AFCOM Greater
Tampa Bay Chapter

May 15, 12:30 to 4 p.m.
www.tampabayafcom.com

AITP Northeastern Wisconsin

May 15
Holiday Inn Appleton
105 S. Nicolet Road
Appleton, Wis.
new.aitp.org/eventsmeeting-info

AITP Twin City

May 16, 7 p.m.
Ozark House Restaurant
704 McGregor St.
Bloomington, Ill.
www.aitp.org/members/group_content_view.asp?group=75779&id=125369

See & Do: Build Virtual Machines
In The Cloud With Windows Azure

May 17
New Horizons New Orleans
2800 Veterans Blvd., Suite 330
Metairie, La.
tinyurl.com/NHNOLA051713

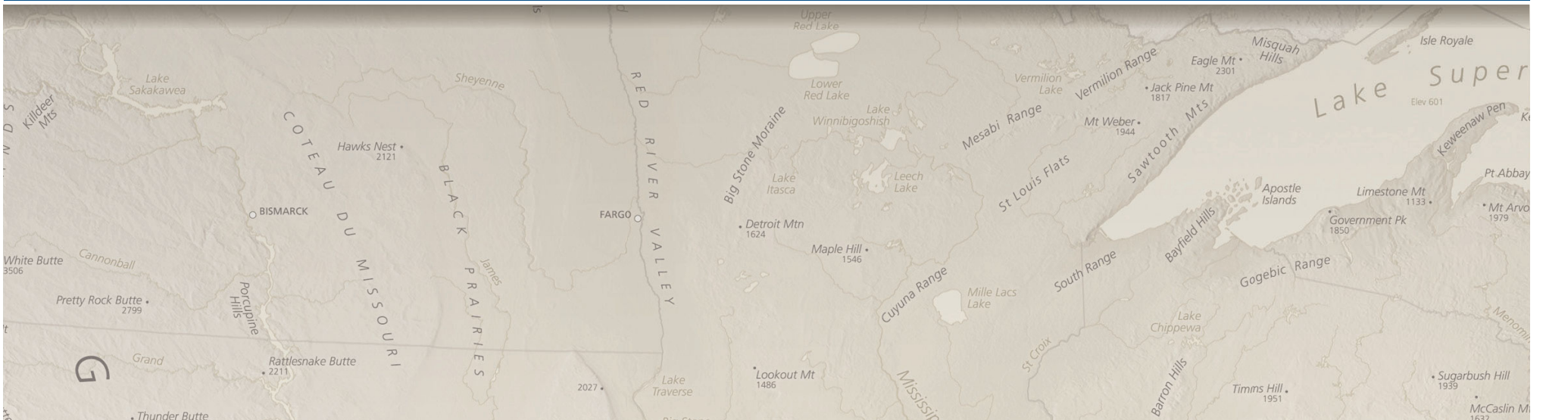
Cisco DESGN

May 19
Institute of Professional Learning
500 W. Cypress Creek Road
Ft. Lauderdale, Fla.
www.iplearning.net

CISSP

May 20
New Horizons Washington, D.C.
1331 F St. N.W., Suite 240
Washington, D.C.
www.dcnewhorizons.com

UpcomingIT Events



AITP Southwest Missouri

May 21
High Street Baptist Church
900 N. Eastgate Ave.
Springfield, Mo.
aitpspringfield.org/main.html

ISSA Los Angeles 5th Annual Information Security Summit

May 21, 7:30 a.m. to 6 p.m.
Hilton Universal City
Universal City, Calif.
www.issala.org/summit

AITP California Southland

May 22
Garden Grove, Calif.
www.aitpcalsouthland.org

ISSA Baltimore

May 22
Concurrent Technologies Corp.
8530 Corridor Road
Savage, Md.
www.issa-balt.org

AITP Akron

May 24
Akron, Ohio
www.akron-aitp.org

ISSA Inland Empire

May 28, 11:30 a.m. to 1:30 p.m.
Upland, Calif.
ie.issa.org

Android DevCon Spring

May 28-31
Boston, Mass.
www.andevcon.com

JUNE

AITP Washington, D.C.

June 13
Alfio's La Trattorio Restaurant
4515 Willard Ave.
Chevy Chase, Md.
www.aitpdc.org

AITP Wheeling Joint Meeting With AITP Pittsburgh

June 17
www.aitp-wheeling.org

AITP Southwest Missouri

June 18
High Street Baptist Church
900 N. Eastgate Ave
Springfield, Mo.
aitpspringfield.org/main.html

SharePoint 2010 SharePoint Designer

June 20
New Horizons Tysons Corner
2010 Corporate Ridge, Suite 200
McLean, Va.
www.dcnewhorizons.com

AITP Akron

June 25
Akron, Ohio
www.akron-aitp.org

ISSA Inland Empire

June 25, 6:30 to 8:30 p.m.
Upland, Calif.
ie.issa.org

AITP California Southland

June 26
Garden Grove, Calif.
www.aitpcalsouthland.org

ISSA Baltimore

June 26
Concurrent Technologies Corp.
8530 Corridor Road
Savage, Md.
www.issa-balt.org

JULY

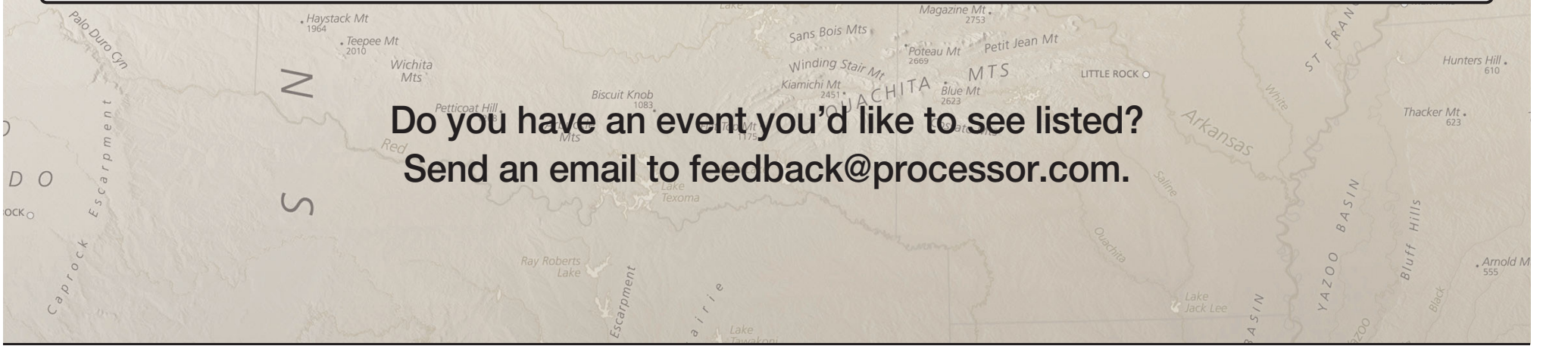
AITP Wheeling

July 10
White Palace at Wheeling Park
1801 National Road
Wheeling, W.Va.
www.aitp-wheeling.org

AITP Washington, D.C.

July 11
Alfio's La Trattorio Restaurant
4515 Willard Ave.; Chevy Chase, Md.
www.aitpdc.org

Do you have an event you'd like to see listed?
Send an email to feedback@processor.com.





Processor is produced by Sandhills Publishing.
Founded in 1978, Sandhills Publishing is an information processing company with a diverse range of products covering a variety of industries. Sandhills Publishing is located in Lincoln, the capital of Nebraska, and benefits from the quality of life and strong work ethic traditionally associated with the Midwest.


Processor Solutions Directory

Here are brief snapshots of several companies offering products designed for the data center and IT industry. Listings are sorted by category, making it easy for you to find and compare companies offering the products and services you need.

You can find more detailed information on these companies and the products they offer inside this issue.

To list your company and products, call (800) 247-4880.

PHYSICAL INFRASTRUCTURE



GEIST


Geist is a leading data center provider for power strips, monitoring equipment, cabinet containment & in-rack cooling, and DCIM systems. Geist's power strips are tailored to meet each client's needs and provide unbeatable performance in the data center. Our industry leading monitoring and cooling solutions increase data center efficiencies and make going green easier than ever before.

Products Sold:

- Power
- Cool
- Monitor
- Manage

(800) 432-3219 | www.geistglobal.com

PHYSICAL INFRASTRUCTURE



PDU Cables

Innovator in data center efficiency


PDU Cables is the leading supplier of power distribution cables assemblies to data centers in North America. PDU Cables has been serving this industry since 1981 and is the first independent cable assembly company to introduce colored conduit into the power distribution cable market, the first to get UL 478 listing, and the first to introduce the Power Cable and Equipment Configurator software tool. The company is centrally located in Minneapolis, Minn., allowing it to offer 24-hour turnaround and shipping time of just one or two days to almost any United States destination.

Products Sold:

A range of power cables, cable seals, and power cord assemblies.

(866) 631-4238 | www.pducables.com

PHYSICAL INFRASTRUCTURE



AMERICOOOL

AIR CONDITIONING


AmeriCool, Inc. is the official sales, marketing, and distribution company for Weltem Air Conditioning products in North America. Our AmeriCool portable air conditioners are built to the highest standards in the industry and offer unbeatable performance, reliability and value. With products ranging from 1 to 5 tons we offer air conditioning solutions to companies small and large. Due to the wide operating range of our product, 24/7 cooling capability and rugged design, our product is a great solution for mission critical needs and harsh industrial applications.

Products Sold:

- Portable Air Conditioning Units

(800) 680-0725 | www.americoolinc.com

PHYSICAL INFRASTRUCTURE



Rack Solutions


RackSolutions has been serving the data center market for more than 10 years. All of our products are designed, engineered, built, and shipped under our own roof. We have product solutions available for every major OEM, but if one of our existing products doesn't fit your needs, our top-notch mechanical and electrical engineers can create the item you need from scratch, solving even the toughest installation design challenges. Best of all, we typically don't charge up-front fees for design services.

Products Sold:

Computer server racks, cabinets, shelves, and mounting products.

(888) 903-7225 | www.racksolutions.com

PHYSICAL INFRASTRUCTURE



SnakeTray

Snake Tray designs and manufactures a series of innovative and labor-saving cable management, power/data distribution enclosures and airflow managers. Our products are designed to lower the total cost of construction.

Products Sold:

- Cable Management Systems
- Cable Trays
- Power Distribution
- Power and Data Distribution Enclosures
- Airflow Management Systems

(800) 308-6788 | www.snaketray.com

PHYSICAL INFRASTRUCTURE



Server Technology

Quality Rack Power Solutions

Server Technology is committed to the PDU market with the largest group of engineers dedicated to power distribution and other solutions within the equipment cabinet. Advancements in device power monitoring help data centers monitor and improve their efficiency, and continuous research and development is fueled by companies that look to Server Technology for their custom cabinet power solutions.

Products Sold:

A complete line of cabinet PDUs, including Per Outlet Power Sensing (POPS), Rack Mount Fail-Safe Transfer Switch, Console Port access with remote power management, Switched, Smart, Metered, Basic, and -48 VDC

(800) 835-1515 | www.servertech.com

PHYSICAL INFRASTRUCTURE



SIMPLEX ISOLATION SYSTEMS


Since 1979, Simplex Isolation Systems has been setting new design standards in modular expandable cleanroom components, isolation curtains, hardware, and new product development. Fontana, Calif.,-based Simplex's unique strip doors and mounting systems are designed for quick installation. Simplex parts and materials perform with optimum efficiency, last longer, and save you money. And with Simplex, you are always backed by industry expertise, product knowledge, and the best warranties in the market.

Products Sold:

• Cleanrooms	• Strip doors
• Enclosures	• Curtains

(877) 746-7540 | www.simplexisolationssystems.com

PHYSICAL INFRASTRUCTURE



TOTAL CABLE SOLUTIONS


Total Cable Solutions (TCS) provides a wide range of products from copper keystone jacks to custom bundled fiber cables. All products are manufactured with TCS's highest quality, in factories that are ISO-9001 and TUV Certified. All of our cable lines meet or exceed EIA/TIA RoHs standards.

Products Sold:

- Fiber patch cords
- Pre-terminated multi-fiber trunk cables
- CAT5e and CAT6 patch cables
- Fiber and copper patch panels
- Keystone jacks, and other accessories

(888) 235-2097 | www.TotalCableSolutions.com

PHYSICAL INFRASTRUCTURE



SENSAPHONE

REMOTE MONITORING SOLUTIONS


Sensaphone has been designing and manufacturing remote monitoring systems for more than 25 years and has more than 300,000 of its products in use. Sensaphone's product lineup offers a full range of devices with a broad number of features and applications designed to monitor your entire infrastructure and alert you to changes. All product engineering functions, including hardware and software design and circuit board layout and assembly, are performed at the Sensaphone facility in Aston, Penn.

Products Sold:

Remote monitoring solutions that provide email and voice alarm notification for problems related to temperature, humidity, water detection, power failure, and more.

(877) 373-2700 | www.sensaphone.com

PHYSICAL INFRASTRUCTURE



SIEMON

Headquartered in Connecticut, Siemon has been around since 1903 as a provider of high-quality cabling solutions designed to improve network connections, performance, and efficiency. The company manufactures end-to-end copper and fiber cabling systems, cabinets, racks and cable management solutions for data centers, and more. Siemon also has an R&D arm, Siemon Labs, which focuses heavily on innovation and shows the company's long-term commitment to its customers.

Products Sold:

• Cable management solutions	• High-speed interconnects
• Data center cabinets and racks	• Intelligent infrastructure management
• End-to-end copper and fiber cabling	

(860) 945-4200 | www.siemon.com

PHYSICAL INFRASTRUCTURE



HM CRAGG

Quality People. Quality Power.


As an integrator and master distributor providing quality power solutions, HM Cragg has built a reputation as the company that delivers innovation to aid and satisfy its customers. HM Cragg was founded in 1968 and is 100% employee-owned, focusing on quality people and exceptional products.

Products Sold:

- AC and DC power solutions (UPSes, power distribution)
- Control and monitoring (environmental and power)
- Connectors and cables (cord sets, ePDU cables)
- Cooling (air flow management, portable cooling)
- Racks and enclosures (standard racks, battery racks)
- Safety equipment (spill containment, safety signs)

(800) 672-7244 | www.hmcragg.com

PHYSICAL INFRASTRUCTURE



PDUdirect.com is a Master Distributor of select Server Technology PDUs for server and networked environments. PDUs Direct's basic, metered, and switched Rack PDUs provide local and remote power management, power monitoring, and environmental monitoring. We pride ourselves in offering industrial-grade quality products at the lowest prices, with the fastest shipping (most orders shipped within 24 hours) and simplest purchase process. We are the Power Behind the Business.

Products Sold:

A complete line of metered and basic PDUs, and 20A switched PDUs.

(888) 751-7387 | pdudirect.com

PHYSICAL INFRASTRUCTURE




LINDY USA specializes in cables, adapters, electronics and accessories for computer, networking and audio video applications. Since 1932 Lindy has supplied high quality interconnects to customers in commercial, telecom and residential markets. What sets us apart is our complete dedication to innovation, performance and reliability. Our cabling products are truly outstanding.

Products Sold:

- Networking Products • Audio / Video • KVM • Sharing, Converting, Extending • USB and FireWire • Input Devices • Add-On Cards • Hardware and Security • Power • Cables • Adapters and much more!

(888)-865-4639 | www.lindy-usa.com/

PHYSICAL INFRASTRUCTURE




Corning Cable Systems is a leading manufacturer of fiber optic communications solutions for voice, data and video network applications worldwide. We offer the broadest range of end-to-end connectivity solutions for customers' telecommunications networks. We put companies at the forefront of network innovation, pioneering many of the global products and solutions commonly used in state-of-the-art cabling systems.

Products Sold:

- Cabling

(607) 974-9000 | www.corning.com

PHYSICAL INFRASTRUCTURE



Rackmount Solutions' mission is to listen to the IT engineer's specific needs and deliver superb-quality, high-performance products through continuous product innovation and operational excellence. We pride ourselves in providing quality customer service, products that fit your IT requirements, and solid value for your money.

Products Sold:

- Wallmount and server racks and cabinets, including sound proof, air conditioned, and large cable bundle
- Desktop/tabletop portable racks
- Shockmount shipping cases
- Bulk cable

(866) 207-6631 | www.rackmountsolutions.net

PHYSICAL INFRASTRUCTURE



The Mestex division of Mestek is comprised of seven company brand names: Applied Air, LJ Wing, Aztec, Alton, Temprite, Koldwave, and Sierra. Mestex is involved in emerging technology and product research focused on using energy and water more efficiently, including ways to improve data center efficiency by using outside air, evaporative cooling, and optimized DDC control schemes.

Products Sold:

- Mechanical and evaporative cooling products
- Heating products
- Outside air tempering products
- Packaged evaporative cooling solutions for mission-critical applications

(214) 819-5262 | www.mestex.com

PHYSICAL INFRASTRUCTURE



C.E. Communication Services (CE COMM) distributes, markets, designs, and manufactures Data Center products, specializing in Network Infrastructure, Cable and Wire Management, and Fiber and Copper Cabling.

Products Sold:

- Patented Cable Management Systems for CISCO Catalyst and all 1U Switches
- Standard & Custom Data Center Cable Assemblies: Copper CAT5E, CAT6 & 6A
- High Density Optical Fiber Assemblies
- Fiber Connectivity, Fiber Test - Inspection and Media Conversion Equipment

(866) 966-1555 | www.ceccommunication.com

PHYSICAL INFRASTRUCTURE




Based in New York City, Hergo Ergonomic Support Systems is an independent designer and manufacturer of enclosure cabinet solutions, technical computer furniture, and modular racking systems. The company's products are designed to promote organization in the workspace and to increase the productivity of computers, peripherals, and communications equipment. Hergo is known for its high-quality products and superior customer service.

Products Sold:

- Racks
- Enclosures/cabinets
- Motorized workstations
- Flat-panel arms
- Computer desks
- Cable management
- Power management

(888) 222-7270 | www.hergo.com

PHYSICAL INFRASTRUCTURE



Founded in 1995, Austin Hughes Electronics Ltd is a design and manufacturing group that offers a broad range of solutions based around 19 inch rack mount technology. With a wealth of experience Austin Hughes design and development teams are focused to rapidly transform customer requirements and market trends into saleable solutions.

Products Sold:

- Infra solution Cabinet Smartcard Handels
- InfraPower Cabinet Intelligent PDUs
- CyberView Rackmount KVM & LCD Console Drawer
- Environmental Sensors

(510) 794-2888 | www.Austin-Hughes.com

PHYSICAL INFRASTRUCTURE



Data Aire, Inc. has been designing and manufacturing precision cooling equipment for more than 40 years. We established some of today's industry standards, such as scroll compressors, steam generator humidifiers and microprocessor controllers. Our equipment can be found in any size organization or data center, from a closet to a Fortune 500 financial data center or government high security operation center. With our experience and expertise we can, and are willing, to design and build equipment to meet our customer's needs. With the shortest delivery times in the industry Data Aire can meet your requirements.

Products Available:

- Floor Mounted Units – CRAC or CRAH
- Ceiling Mounted Units
- Rack and Row Solutions
- Specialty Units
- Heat Exchangers
- System Controls

(800) 347-2473 | www.dataaire.com

PHYSICAL INFRASTRUCTURE



AVTECH Software, founded in 1988, is focused on making the monitoring and management of systems, servers, networks, and data center environments easier. AVTECH provides powerful, easy-to-use software and hardware that saves organizations time and money while improving operational efficiency and preparedness. AVTECH products use advanced alerting technologies to communicate critical status information and can perform automatic corrective actions.

Products Sold:

A full range of products that monitor the IT and facilities environment, including temperature, humidity, power, flood, room entry, and UPS

(888) 220-6700 | www.AVTECH.com

PHYSICAL INFRASTRUCTURE



BayTech was founded in 1976 and, since the 1990s, has developed unique products for remote power management. The company uses printed circuit board instead of wires for a better, more resilient connection between the data center equipment and the receptacle. BayTech provides an extensive Web site with brochure downloads, warranty information, and reseller support and also offers evaluation units for data centers.

Products Sold:

- Power control, distribution, management, and metering
- Power transfer switches
- Console management and remote site management

(800) 523-2702 | www.baytech.net

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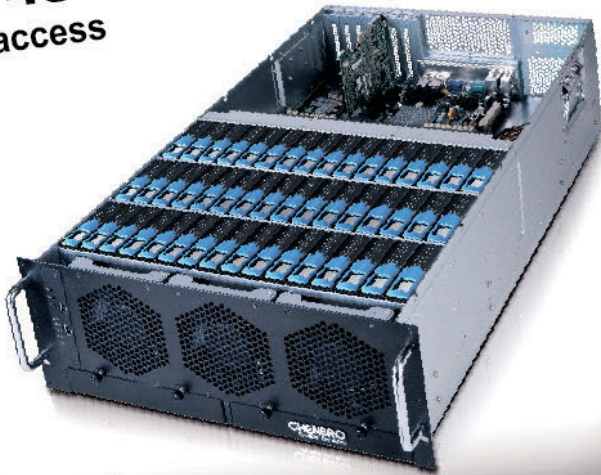


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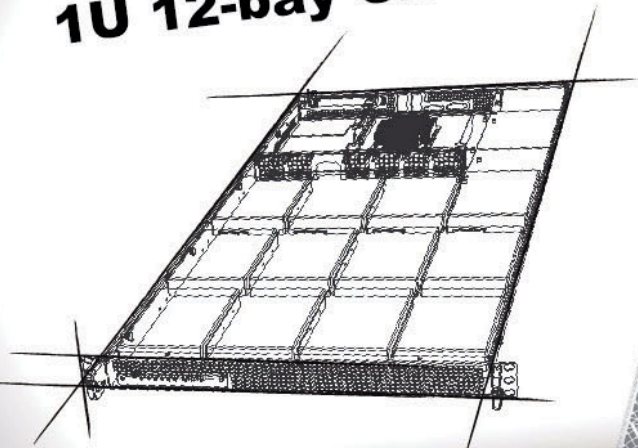
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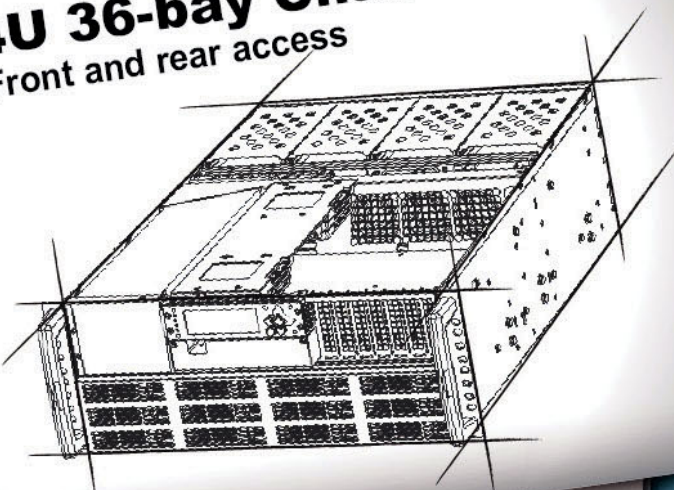


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